ABSTRACTS

Epithelial-mesenchymal transition of tubular epithelial cells in crescentic glomerulonephritis

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OP

In recent studies performed on cultural cells and experimental nephropathies, as well as on human biopsies, epithelial - mesenchymal cell transdifferentiation (EMT) was presented, a phenomenon characterized by loss of epithelial markers in epithelial cells and acquisition of mesenchymal phenotype and of fibrosing properties. Our aim was to test that EMT is involved in human crescentic glomerulonephritis (CG). We documented anatomical connection between urinary pole and crescentic formation, then estimated cellular phenotype CD 68 for macrophages, vimentin for mesenchymal cells and cytokeratins (CK, CK 18) for tubular cells. Zonal interstitial infiltrates, positive on CD 68 surrounded proximal tubules close to urinary pole (78,1+/-29,2 cells on high magnification) and positive numerous cells were present in cellular crescents. Numerous fibroblasts (65,3+/-11,5) were also present in the same area and in crescent formation (8,5+/-3). Some of tubular cells were negative on CK and CK 18, i.e. they have lost their epithelial phenotype, and they were positive on CD 68. Our results suggest that via transition to a mesenchymal phenotype tubular epithelial cells can produce crescents.

Pulse pressure, left ventricular hypertrophy and renal function in SHR with ADR nephropathy

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OP

Over the years, diastolic- (DAP), systolic- (SAP), mean- (MAP) and pulse (PP) pressures have successively been entered into the equation for cardiovascular (CVS) risk. In recent studies PP has been shown as a risk factor for left ventricular hypertrophy (LVH), myocardial infarction, congestive heart failure, stroke, but also chronic renal failure. In the present study the correlation between blood pressures components and LVH, body weight (BW), kidneys weight (KW) and renal function has been analyzed in spontaneously hypertensive rats (SHR) with adriamycin (ADR) nephropathy, treated with carvedilol and captopril. Sixty adult (24 week) SHR were divided into three groups: 1.control group - 20 SHR; 2.ADR group - 20 SHR treated with ADR (2mg/kg i.v. twice in 20 days); 3.ADR-CC group - 20 SHR treated with ADR and carvedilol (30mg/kg/day) and captopril (60mg/kg/day). SAP, DAP, MAP and PP were determined at weeks 6 and 12; body weight, creatinine clearance (Ccr) and proteinuria (prt) were measured at weeks -3, 6 and 12. The rats were sacrificed at weeks 6 and 12 after the second ADR injection and weight of left and right ventricles as well as kidneys was measured. Carvedilol and captopril significantly reduced blood pressure and LVH; improved Ccr that decreased in ADR group, but failed to prevent proteinuria. Body weight increased during the study, as well as kidneys weight. The lightest kidneys were in control group and the heaviest in ADR-CC group. Significant correlation between PP and proteinuria, PP and Ccr, PP and KW was found in all groups of rats in weeks 6 and 12. No significant correlation was found between PP and BW. Although closer correlation was found between PP and LVH than between SAP, DAP, MAP and LVH, these correlations were not significant. In conclusion, combination of carvedilol and captopril effectively reduced blood pressure and had beneficial effect on development of LVH and chronic renal failure. Moreover, the PP is a significant determinant of LVH, proteinuria, kidney weight and function in ADR SHR.

A study of the effectiveness of music listening in reducing stress and perceived pain in patients undergoing hemodialysis

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OP

Research findings have indicated that stress and pain are two of the main factors that affect quality of life in patients suffering from chronic illness. The aim of this study was to examine the effectiveness of music listening in reducing stress and perceived pain in patients undergoing hemodialysis treatment. This study adopted a quantitative

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approach and involved a between-subjects design. Sixty end stage renal failure patients (n=60) who were undergoing hemodialysis treatment participated in this study on a voluntary basis. Participants were divided into control (n=30) and experimental group (n=30). Patients in both groups were asked to complete before the intervention the State-Trait Anxiety Questionnaire, one form from the McGill Pain Questionnaire and a Pain Visual Analogue Scale. After completing the questionnaires participants in the experimental group listened to a cd of their preference. Participants in the control group did not receive any music listening. After the intervention participants in both groups completed the State-Anxiety Questionnaire and the Pain Visual Analogue Scale. In addition, participants in the experimental group were also asked to complete an evaluation questionnaire on the music intervention they received. Results were analysed using the SPSS. Results indicated that mean State Anxiety scores differed significantly across group after the intervention F (1,58)= 35.877,p= .000, specifying that mean State Anxiety scores for participants in the experimental group were significantly lower than mean State Anxiety scores for participants in the control group. In addition, there was a positive significant correlation between trait and state anxiety scores (r=.708, p<.01) suggesting that perception of stressful situations is directly related to stress as a personality characteristic. Furthermore, findings revealed that trait anxiety scores differed significantly between male and female participants, with women scoring higher than men in trait anxiety (t= -2.286, df=58, p=.026, 2-tailed). Results did not indicate a significant difference between group means of perceived pain. The present findings suggest that music has the power to reduce stress and act as a source of relaxation and distraction in medical settings.

Factors influencing blood pressure control in school aged children

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OP

In order to estimate factors influencing blood pressure control in children and adolescents we investigated 105 school-aged children, 63 Males and 42 Females, aged 11,28 + 2,99 (4-18) years old. After an overnight (12 hrs) fasting we measured the following parameters: Height (H=m), Weight (Wt=Kg), BMI, Waist circumference (W=cm), Hip circumference (H=cm), W/H ratio, Insulin (Ins=micro units/ml), Glucose (Gl=mg/dl), Cholesterol (Ch=mg/dl), Cholesterol-HDL (Ch-HDL=mg/dl), Cholesterol-LDL (Ch-LDL=mg/dl), Triglycerides (TG=mg/dl), Atheromatous Index, Uric acid (Ua=mg/dl), Systolic Blood Pressure (SBP=mmHg), Diastolic Blood Pressure (DBP=mmHg), Mean Arterial Pressure (MAP=mmHg), HOMA-R index, QUICKI index and Creatinine Clearance (Clcr=ml/min). The results showed: H=1,49 + 0,17 (1,1-1,81) m, Wt=50,29 + 19,6 (18,5-109,0) Kg, BMI=21,51 + 4,68 (14-34,65), W=73,64 + 14,61 (47-112) cm, H=88,39 + 15,23 (58-123) cm, W/H ratio=0,82 + 0,06 (0,67-1,02), Ins=8,2 + 4,67 (0,9-22,0) mU/ml, Gl=85,65 + 11,9 (58-118) mg/dl, Ch=173,64 + 39,65 (106-370) mg/dl, Ch-HDL=44,86 + 11,79 (20-76) mg/dl, Ch-LDL=115,41 + 37,15 (53-300) mg/dl, Tg=62,04 + 30,51 (22-176) mg/dl, Ath-I=4,07 + 1,23 (2-8,3), Ua=3,56 + 1,1 (1,7-7,1) mg/dl, SBP=110,51 + 12,64 (80-160) mmHg, DBP=70,23 + 10,22 (40-100) mmHg, MAP=83,69 + 10,22 (58,33-120) mmHg, HOMA-R=1,78 + 1,11 (0,12-5,7), QUICKI=0,367 + 0,051 (0,297-0,582), Clcr=123,31 + 20,07 (79,75-175,31) ml/min. Thirteen children (26,5 %), aged<11 years (n=49), showed SBP>110 mmHg and nine children (15,8 %), aged>11 years (n=57), showed SBP>120 mmHg. Statistical analysis results are showed in table.

AGE BW BMI WAIST HIP INS. QUICKI HOMA-R Ua.

SBP

r=0.41,p<0.01; r=0.42,p<0.01; r=0.37,p<0.01; r=0.41,p<0.01; r=0.43,p<0.01; r=0.17,p=0.07; r=-0.29,p<0.05; r=0.17,p=0.07; r=0.32,p<0.01;

DBP

r=0.47,p<0.01; r=0.55,p<0.01; r=0.53,p<0.01; r=0.58,p<0.01; r=0.56,p<0.01; r=0.20,p<0.05; r=-0.34,p<0,05; r=0.21,p<0,05; r=0.30,p<0.01.

The most important variable influencing SBP is the hip circumference (peripheral obesity) and the most important variable influencing DBP is the waist circumference (central obesity). Insulin levels show a biphasic effect upon SBP and DBP as follow: The 75th percentile of insulin is estimated at 10,4 mU/ml. Correlation of Insulin (<10,4) vs. SBP: n=79, r=0,33, p=0,002 and Insulin (>10,4) vs. SBP: n=26, r= -0,36, p=0,07. Correlation of Insulin (<10,4) vs. DBP: n=79, r=0,44, p=0,00004 and Insulin (>10,4) vs. DBP: n=26, r= -0,48, p=0,01. In conclusion the results of this study suggest that blood pressure increases parallel to the age. Somatometric indices play the most important role in blood pressure control. Peripheral obesity determines principally the systolic blood pressure and central obesity the diastolic blood pressure. Insulin sensitivity is the third factor influencing blood pressure control. Insulin, per se, plays a pivotal role in blood pressure control. Insulin levels, within normal range, produce a positive effect upon blood pressure, but high insulin levels exert a hypotensive action.

Balkan endemic nephropathy in Bosnia and Herzegovina - report of the renal registry

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OP

Balkan Endemic Nephropathy (BEN) is still dominant cause of the end stage renal disease (ESRD) in North-Eastern Bosnia. The aim of this paper was to analyse the patients with BEN diagnosis on chronic dialysis treatment in Bosnia and Herzegovina. Methods: In this study we used data from dialysis centres (DC) which we collected for Renal Registry. Individual question form include: sex, age, place of birth and address, primary renal disease, date of the first dialysis treatment, type of dialysis, kidney transplantation, co-morbid diseases, erythropoietin therapy and outcome. For patients with BEN diagnosis we gathered additional data: history of urothelial tumor and family history of similar kidney diseases and renal replacement therapy. We compared these data with data about others dialysis patients in Bosnia and Herzegovina. Statistical analysis: prevalence and incidence of the patients per million population (pmp), Student t-test, $\chi 2$ test. Results: 23 DC in Bosnia and Herzegovina reported totally 1895 patients on chronic dialysis treatment (more than 90 days). There were 279 (14.72%) patients with BEN diagnosis, 260 of them (93.19%) in four DC in North-Eastern Bosnia: Brcko, Samac, Bijeljina and Odzak. Prevalence of the chronic dialysis patients in Bosnia and Herzegovina in 2003 was 474 pmp, 70 pmp for patients with BEN and 54 pmp for patients with diabetic nephropathy. In North-Eastern Bosnia prevalence of chronic dialysis patients was 844 and of patients with BEN 520 pmp. Incidence of the new chronic dialysis patients in Bosnia and Hercegovina in 2003 was 113 pmp, 11 pmp for BEN, and 19 pmp for diabetic nephropathy. In North-Eastern Bosnia incidence of the new chronic dialysis patients with BEN diagnosis was 68 pmp. We found the same number of male and female BEN patients (140 female, average age 64.63+7.01 years (43-82) and 139 male average age 65.37+6.42 years (47-87). The youngest reported patients were two women in age of 43, and the oldest patient has 87. 53% of the BEN patients were in age group between 60 and 69 years. Average number of dialysis months in BEN patients was 58.26+/-52.87 (range 3-348). About 14% of the BEN patients were treated by dialysis less than one year. Urothelial tumor was reported in 32 from 279 BEN patients (11.47%), 21 male (65.63%) and 11 female ($p<0.025$). 177 BEN patients (63.44%) confirmed similar kidney disease in family, but 68 (24.37%) have had some family member on dialysis therapy. We found only one BEN patients with kidney graft (0.36%). Mortality of the chronic dialysis patients in Bosnia and Herzegovina in 2003 was 11.24% and mortality of the BEN patients 10.75%. Conclusion: From the total number of the chronic dialysis patients in Bosnia and Herzegovina 14.7% are BEN patients and 11.3% are patients with diabetes. BEN is still big medical and social problem in Bosnia and Herzegovina, especially in the North-Eastern Bosnia. There are certain indicators that the incidence of the BEN patients is in decrease such as decreased difference between the prevalence of the patients with BEN and diabetic nephropathy; as well as increase of average age of patients with BEN.

Aggregate vs. individual data collection in renal registry: data quality assessment

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OP

Epidemiological data about renal replacement therapy (RRT) are of great importance in prevention as well as funding of end stage renal disease (ESRD) treatment. This study was aimed to compare retrospectively epidemiological data (gender, age, mortality, causes of ESRD and death) of both incident and prevalent patients (pts) on maintenance hemodialysis (HD) collected either as aggregate (year 2002) or individual (years 2003 and 2004). Study enrolled centers that submitted complete data to the Registry of Renal Replacement Therapy until April 15th 2005. Fourteen centers met inclusion criteria. Data from 1206 (year 2002; age 55.87+13), 1351 (2003; age 57.39 + 13.69) and 1297 (2004; age 57.28 + 13.43) HD pts were analyzed. Patients in year 2002 were significantly younger (2002 vs. 2003 $p= 0.004$, 2002 vs. 2004 $p = 0.0081$). Male gender was more frequent (2002: No 681, X2 =19.9; 2003: No 785, X2= 34.8; 2004: No 726, X2= 18.03; $p< 0.0001$). The most frequent ESRD cause was glomerulonephritis (2002: 24%; 2003 and 2004: 20%). Significantly higher frequencies of diabetes mellitus were found in 2002 (N= 141) than 2003 (N= 105, X2=4.98, p=0.026) and 2004 (N= 102, X2=5.94, p=0.016), hypertension (2002 N= 182 vs. 2003 N= 105: X2=20.12, $p< 0.0001$; 2002 vs. 2004 N= 108: X2=18.3, $p<0.0001$) and chronic renal failure of unknown etiology (2002 N=154 vs. 2003 N=223: X2=12.26, $p<0.0001$; 2002 vs. 2004 n=221: X2=11.61, p=0.0007). No significant difference was found in between ESRD causes in years 2003 and 2004. Mortality in 2002 (17.4%) was similar as in 2003 (19.6%, X2=1.89, p=0.176) and significantly higher than 2004 (12.6%, X2=10.97, p=0.0009). Cardiovascular causes of death were more frequent in year 2003 (N= 142, vs. 2002 n=92, X2=10.26, p=0.0018 and vs. 2004 N= 69, X2=24.57, $p<0.0001$) and cerebrovascular causes in year 2002 (N= 55 vs. 2004, N= 34, X2=4.49, p=0.036). Significant variability was found in comparison of ESRD causes between year 2002 (diabetes mellitus, hypertension) and 2003 and 2004, as well as in causes of death comparison for the same years (cardiovascular, infections). These results suggest necessity for renal registry

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format based exclusively on individual data collection. Difference between causes of ESRD and comorbidities was delimited by individual data collection.

Is a decreased level of superoxid dismutase associated with microalbuminuria in type 1 diabetic patient?

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OP

Superoxide dismutase (SOD) is a key antioxidant enzyme of the cell. Diabetes mellitus increases the levels of radical oxygen species and modifies the antioxidant parameters. The aim of the study was to assess correlations between the increase of oxidative stress (OS), the modification of antioxidant parameters and the development of microalbuminuria (MA) in type 1 diabetic patients. Material and methods: We determined the oxidative status by measuring the level of superoxide dismutase (SOD-Minanui method), catalase (CAT-Aebi method), glutathione peroxidase (GPx-Fukuzawa method) and gluthation (GSH-Ellman method) in 87 type 1 diabetic patients (44 with normoalbuminuria - group A and 43 with MA-group B), and 38 nondiabetic matched controls. History of diabetes mellitus (DM) ranged from 4 to 16 years. The mean glycaemia was 211,11+4,99 mg/dl. We also determined microalbuminuria (using an immunological method) in the first morning urine. Results: Compared to controls, the diabetic group with microalbuminuria showed significantly decreased levels of SOD (-22.3%) and GSH levels (-47%), increased CAT levels (+29.5%, p=0.0001) and GPx levels (+2.3%, ns). Compared with the diabetic group without microalbuminuria (group A), group B had levels of SOD with 19.93% lower (p=0.0001) and GSH levels with 12.81% lower (p=0.023) and insignificantly increased level of CAT (+1.8%) (ns) and GPx (+1.3%) (ns). Conclusions: Type I diabetic patients have a higher oxidative stress than the control group. In type 1 diabetic subjects, MA is associated with decreased levels of superoxide dismutase. The levels of GSH are strongly associated with increased of oxidative stress and hyperglycaemia.

Factors associated with endothelial function in chronic peritoneal dialysis patients

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OP

It is well known that cardiovascular risk factors such as hypertension and hyperlipidemia may cause endothelial dysfunction, which play a pivotal role in the development and progression of atherosclerosis and its clinical complications. In addition, it was also shown that chronic renal failure patients and peritoneal dialysis (PD) patients are characterized by endothelial dysfunction. In this study, we aimed to investigate factor(s) associated with endothelial function in chronic PD patients.

We included 47 chronic PD patients with a mean age of 41.5 ± 11.4 years (male/female: 24/23). All patients were on peritoneal dialysis more than 6 months and were characterized by absence of cardiovascular disease. The etiologies of chronic renal failure were hypertension (n=12), chronic glomerulonephritis (n=12), chronic intersitial nephritis (n=11) and unknown in 12 patients. We assessed flow-mediated dilatation (FMD %) expressed as endothelial function and glyceryltrinitrate-induced dilatation of the brachial artery (GTN%) by high resolution ultrasonography described by Celermajer et al. We performed 24 hrs ambulatory blood pressure measurement and peritoneal equilibration test in all patients. We have also investigated biochemical parameters including sensitive CRP (sCRP), homocysteine and intact parathyroid hormone (iPTH).

FMD % and GTN % of patients were 9.8 ± 6.4 % and 18.4± 8.7 %, respectively. There were no correlation between FMD % and sCRP, homocysteine, mean arterial pressure. However, multiple regression analysis revealed that age and residual renal function were the factors independently correlated with FMD %. (β=-518 p=0.01, β =483 p=0.02, respectively). GTN % was found to be negatively correlated with PTH (r=-405, p= 0.04), age (r=-424, p=0.02) and serum albumin level (r=-0,312, p=0.02) and positively correlated with serum magnesium level (r=401, p=0.013). Multivariate analysis revealed that serum albumin (β=,-3.937, p=0,01) and magnesium level (β=,519 p=0.01) were the factors independently correlated with GTN% .

In conclusion, residual renal function and age were found to be main parameters correlated with endothelial function in chronic PD patients. This finding may indirectly show the importance of residual renal function in cardiovascular risk and also patient survival in chronic PD practice.

Diagnostic value of kidney function disorders in Balkan endemic nephropathy

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OP

Diagnosis of Balkan endemic nephropathy (BEN) is usually established according to the criteria defined by Danilovic. The aim of the study was to compare laboratory findings and their diagnostic value in BEN patients and patients with other kidney diseases and healthy controls. Four groups of persons were examined: group 1,19 BEN pts (68.3±13.9 yrs; 9 males); group 2,23 BEN suspected pts (59.22±13.52; 12 males); group 3,32 (67.94±9.53; 16 males) pts with other renal diseases and group 4,23 (49.57±12.79; 15 males) healthy controls. Besides, 30 persons from BEN families with proteinuria who did not fulfil Danilovic's criteria were examined. Laboratory analysis involved: peripheral blood cell count, proteinuria, alfa1-microglobulinuria (alfa1-MG), 24 hour creatinine clearance (Ccr), fractional sodium excretion (FENa), tubular phosphate reabsorption (TRP), urine osmolality, specific gravity (SG), alkaline phosphatase (u-AP). Proteinuria was higher in two BEN groups than in healthy controls ($p<0.01$), but no difference was found between BEN groups and other renal disease group. Ccr was significantly lower in BEN pts as compared to the others ($p<0.001$), and 26% of BEN suspected pts had decreased Ccr. Low urine SG was found in 31% BEN and 8% BEN suspected pts. Anemia was found in BEN pts. Laboratory findings which had not been included in Danilovic's criteria were also analyzed. Urine osmolality was significantly lower in BEN pts as compared to the others ($p<0.025$). The FENa was higher and TRP lower in BEN and BEN suspected pts but insignificantly. Alfa1-MG was found in 74% BEN and 57% BEN suspected pts. U-AP was higher in BEN pts than in the pts with other renal disease ($p<0.04$). Out of 30 persons from BEN families who did not fulfil criteria for BEN isolated proteinuria was found in l7, proteinuria and tubular disorders in 13. Although different tubular disorders were found in these 30 persons, none of laboratory criteria proposed by Danilovic was found. Conclusion, diagnostic criteria proposed by Danilovc enable diagnosis of BEN in advanced phase of disease. The persons from BEN families with proteinuria, who did not fulfil criteria for diagnosis BEN, should be the object of further investigation.

Renal cell proliferation in nephritis: R-roscovitine (CYC202) alleviates proliferation without aggravating podocyte injury

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OP

Cyclin-dependent kinase (CDK) inhibition is a new approach for the treatment of proliferative glomerulonephritides (GN). CDK2 is required for the G1/S transition. DNA synthesis is inhibited by CYC202 (R-roscovitine). Given that podocytes express CDK2 in GN and that loss of podocytes is a likely cause of glomerulosclerosis, we asked whether CDK2 inhibition is safe in diseases characterized by podocyte injury. Passive Heymann nephritis (PHN) was induced in male Sprague-Dawley rats by i.v. injection of 0.3 ml sheep anti-Fx1A antibody per rat. Treatment with CYC202 was started on day 3 and continued until day 30. Three groups of rats were studied: group I received vehicle alone, group II treated with 25 mg CYC202/kg/day and group III treated with 50 mg CYC202/kg/day. Treatment of nephritic rats with CYC202 resulted in a dose-dependent decrease of mean systolic blood pressure. Urinary albumin excretion was not significantly different between the groups at any of the time points measured. Desmin expression was markedly upregulated in almost all glomeruli on days 9 and 30 without significant differences between the groups. However, it tended to be lower on day 30 in the CYC202 groups. Treatment with CYC202 decreased the number of glomerular and tubulointerstial mitotic figures as compared to vehicle group. The glomerular expression of cyclin D1-positive cells decreased significantly on day 9 in both groups receiving CYC202. CYC202 activity in vivo was evidenced by significantly reduced glomerular and tubulointerstitial cell proliferation. Despite the above, CDK inhibition in passive Heymann nephritis did not aggravate the course of the disease and in particular did not aggravate podocyte damage. Our study demonstrates that it is safe to administer CYC202 (R-roscovitine) for a 4 week period in glomerular diseases characterized by primary podocyte injury. CYC202 therefore continues to hold promise as a novel therapeutic approach to proliferative glomerular disease.

Renal and Cardiovascular Protective Effects of Estradiol Metabolites – Preclinical Evidence for Clinical Investigation

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OP

An excessive rate of cardiovascular morbidity and mortality characterize chronic renal disease (CRD). Similar to cardiovascular disease, the incidence and prevalence of CRD is higher in men than in women, and the rate of progression of CRD is more rapid in men than in women. The resistance of kidneys in women to the progression of renal disease is most frequently attributed to estrogens. The current line of evidence suggests that several of the observed cellular effects of 17β-estradiol (E2) are mediated by its metabolites. Our studies in rodent models of renal and cardiovascular disease indicate that estradiol metabolites may exert renal and cardiovascular protection. We have shown that 2-hydroxyestradiol (2HE), an E2 metabolite with little estrogenic activity, reduces obesity, improves metabolic status, and exerts vascular and renal protection in young obese, diabetic ZSF1 rats. Also, 2HE reduces proteinuria and decline in renal function (inulin clearance) in the puromycin-induced chronic renal failure rat model. *In vivo,* 2HE is readily converted to 2-methoxyestradiol (2ME), a major estradiol metabolite with no estrogenic activity. We have also demonstrated that 2ME and its synthetic analog 2-ethoxyestradiol (2EE) attenuate diabetic nephropathy in adult obese ZSF1 rats, and that 2HE and 2ME attenuate renal and cardiovascular disease induced by either chronic NOS inhibition (LNNA) or by chronic angiotensin II administration. In conclusion, our preclinical data provide the evidence for, and warrant clinical investigation of, renoprotective effects of estradiol metabolites.

NCAM positive interstitial cells are increased in initial phase of interstitial fibrosis

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OP

In adult human kidneys, NCAM expression is restricted to rare interstitial cells with dendritic morphology, which are neurofilament-negative and predominantly localized in the outer medulla. In this study NCAM expression was analyzed on interstitial cells in 20 biopsyes specimens with different forms of glomerulonephritis associated with interstitial fibrosis by immunohistochemistry and Western blot analysis. NCAM+ renal interstitial cells were characterized by double immunofluorescent staining using antibodies against alpha smooth muscle actin, vimentin, alpha-5-beta-1 integrin and the potential progenitor cell markers CD34, CD117, CD133, CD24 and cadherin-11. The number of NCAM+ interstitial cells increased in the initial phases of interstitial fibrosis in different forms of glomerulonephritis such as IgA nephropathy, focal segmental glomerulosclerosis, membranous glomerulonephritis as well as in early phase of rapidly progressive glomerulonephritis. NCAM isoform of 140 kDa was detected in renal tissue of IgA nephropathy. In normal renal tissue NCAM positive cells are very conspicuous, single located and some subpopulation of them co-express the hematopoietic stem cell markers CD34 and CD133. However, in different forms of GN in the areas with slight interstitial interstitial fibrosis, the accumulated NCAM positive interstitial cells do not share CD34 and CD133 and they are also negative for alpha smooth muscle actin. These data indicate that a rare subpopulation of NCAM+ interstitial cells in normal adult kidneys could represent renal progenitors. The number of NCAM+ interstitial cells is increased in the initial phase of interstitial fibrosis in different forms of glomerulonephritis and these cells are probably involved in this process.

Ovariectomy Exacerbates Fibrosis in Chronic Obstructive Uropathy in Rats

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PP

Fibrosis is a final common pathway for various forms of chronic renal disease (CRD) that ultimately leads to end-stage renal disease. Men with CRD of various etiologies show a more rapid decline in renal function compared to women, and the resistance of kidneys to the progression of CRD in women is mainly attributed to estrogens. In addition to estradiol (E2), we have demonstrated that the metabolites of E2 also have protective effects in different models of CRD. The goal of this study was to determine the effects of estrogen deficiency on progression of interstitial fibrosis and proliferative response (PCNA staining) in obstructive unilateral uropathy (OUU) in female rats. Ovariectomy (OVX) significantly augmented interstitial fibrosis in the obstructed kidney 7 and 28 days after ligation (Day 7: 21.5±1.3 vs. 31.5±2.8%; Day 28: 39.3±2.1 vs.53.8±3.7%; OUU vs. OVX-OUU group; $p<0.001$), and had no effect on the contralateral intact kidney. Furthermore, removal of ovaries increased tubulointerstitial proliferative index (PCNA staining) in the obstructed kidney at Day 7

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(Labeling Index: 25.5±2.8 vs. 45.9±4.1%; QS Index 10.7±0.9 vs. 14.4±1.4%; OUU vs. OVX-OUU). This study provides the first evidence that, in a model of aggressive and severe renal fibrosis, estrogens attenuate fibrosis and have beneficial effects on the progression of renal disease.

Soluble serum transferrin receptors in type 2 diabetic patients with proteinuria

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PP

Aim: To record the difference in the level of soluble serum transferrin receptors (sTfr) in type 2 diabetic patients with selective nephrotic proteinuria (SNP) compared to patients with non-selective nephrotic proteinuria (NNP), and confirm the thesis that the sTfr is good marker of iron status and erythropoesis in these patients. Methods: There were 63 type 2 diabetic patients with diabetic nephropathy and proteinuria included in the study. The patients were divided into 3 groups regarding largeness and selectivity of proteinuria. Twenty-four patients had SNP, and nineteen patients had NNP. Control group constitute twenty patients with selective nonnephrotic proteinuria <2.5 g/day. In all groups were measured: erythrocyte count, hemoglobin level, mean cell volume, C reactive protein, fibrinogen level, serum iron level, total iron binding capacity, unbound iron binding capacity, iron saturation, serum ferritin, creatinine clearance, serum protein electrophoresis, proteinuria (biuret), urinary protein immunoelectrophoresis, and sTfr. The sTfr were detected in serum using ELISA techniques, and quantified in mg/L. Results: We recorded significant difference in sTfr level between NNP group and SNP group, and between NNP group and control group (NNP 2.0+/-0.8; SNP 2.9+/-1.8; control 2.7+1.0; $p<0.05$; $p<0.05$), and significant difference in biuret and fibrinogen level between NNP and SNP group in compare to control group ($p<0.05$; $p<0.05$). Conclusion: Significantly lower sTfr in NNP group in compare to SNP and control group, and in absence of significant difference in both iron and erythropoesis markers and factors with possible negative contribution according to both of them (e.g. inflammation, stage of renal insufficiency), is probably result of loss of sTfr through heavily and largely damaged glomerular capillary membrane in NNP group. Therefore, sTfr is not good marker of iron status and erythropoesis in type 2 diabetic patients with NNP.

Frequency of Alport syndrome at dialysis center "Vrsac"-Vrsac

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PP

Alport syndrome is relatively rare disease. In Vrsac county great frequency of Alport syndrome is noticed. There is a large percentage of this disease causing ESRD at our dialysis center. All patients are from one gipsy family with numerous members. This study is implemented with the aim to establish the frequency of this disease, to make a geneologic tree and to confirm the type of inheritance. Through the family inquiry as well as the review of the medical documentation, the genealogical tree was made. Various tests have been done: epidemiological, clinical, ophtalmological and audiometrical. The percentage patients with the Alport syndrome is 12,5% at our dialysis center, and this is compared with the data from the other registers. The data from UK and US shown that Alport syndrome causing ESRD in approximatively 0,6-2,3%.The data from other dialysis centers at our country is not more 1% of Alport syndrome as a cause of ESRD. Analyzing the geneology tree of this family, a direct X chromosome and autosomal recessive way of inheritance has not been confirmed, therefore the autosomal dominant variant is much more possible even the consanguinity. Considerably greater frequency of the Alport syndrome in our dialysis center is confirmed comparing to the other center in our country, which is probably caused by consanguinity or mutation that is not connected with the X chromosome.

Physician awareness of chronic kidney disease in a county hospital in Romania

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PP

The predicted increase of the prevalence of end-stage renal disease (ESRD) in the following years will pose a significant health cost and social burden. Physicians must inform their patients about having chronic kidney disease (CKD) in order to establish early intervention programs, which have been proven to delay the progression from CKD to ESRD. For this reason, we examined the awareness and patterns of practice of our colleagues, physicians of different specialities (general internal medicine, gastroenterology, cardiology, surgery) regarding CKD. We performed a retrospective study of the charts of the patients admitted during a three-month period (September-November 2004) in the respective departments. Due to financial constraints, we could not perform such a research targeting the family physicians in our county. We reviewed 1320 charts. No patient had an evaluation of GFR or creatinine clearance (CrCl) and diagnosis of chronic kidney

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disease rested solely on the value of serum creatinine. Using a GFR or CrCl calculation, 94 patients (7.12%) had possible CKD; while using only the serum creatinine, 60 (4.54%) had stage 3 or 4 CKD. 51 (3.86%) had a diagnosis of chronic renal failure included in their discharge note. 4 patients (0.30%) had ESRD and required initiation of dialysis. The nephrologist was called in 34 cases (2.57%) and called again in 22 cases (1.66%). The treating physician included the nephrologists' prescription in the discharge note in 3 (sic!) cases (0.22%). The most often included were the therapeutic lifestyle changes (low-salt, low cholesterol diet) and drug treatment associated with cardiovascular disease - 74 patients (5.60%). Hypoproteic diet was largely ignored, except for the 3 patients. Nephroprotective medication (mainly angiotensin-converting enzyme inhibitors and sartans) was used in 42 patients (3.18%). Diuretics were appropriately prescribed in 22 patients (1.66%). Anaemia was present in 28 cases (2.12%) and treated only in 12 of the 28 (42.85%). 18 patients (1.36%) had mild type 2 diabetes and all 18 received treatment for it. The cardiologists were the most likely to call a nephrologist (16 of 28 cases- 57.14%); the gastroenterologist and the internist were the least (4 of 9 cases- 44.44% and respectively 9 of 20- 45%) - $p<0.05$; surgeons relied on the advice of the intensive care doctors. One patient of 14 (7.14%) presented for a follow-up appointment scheduled by the nephrologist. These data show that other specialist physicians but for the nephrologists do not know about CKD. Consequently, the patients suffering from CKD are not appropriately identified - especially in the early stages, when they could benefit more - and treated. This situation calls for long-term actions similar to those of the cardiologists (National Kidney Disease Education Program, National Cholesterol Education Program, etc.) targeting the primary care physicians, other specialists and the patients. Short-term, local or individual actions might include a separate letter signed by the nephrologist for the primary care physician added to the other specialist's discharge note and "academic detailing" of the issues concerning CKD to other fellow colleagues.

Amyloidosis in Turkish patients

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PP

Cases with proven amyloidosis from various biopsy sites were classified by means of immunohistochemistry. The correlation of immunohistochemical subtyping with clinical diagnosis was assessed and epidemiological data were achieved. Method: One hundred twenty eight biopsies from 111 patients were included in the immunohistochemical study. Results: Renal and rectal biopsies comprised the main biopsy sites, followed by testicular, liver, small intestinal and bladder biopsies. Amyloid deposits were stained by a single antibody in 120 biopsies. Pure AA positivity was seen in 113 biopsies whereas AL was positive in 6, and b2MG was observed in one biopsy. The clinical diagnosis of 81 patients with 98 biopsies all showing AA positivity was suggestive of familial Mediterranean fever (FMF). Eight patients with tuberculosis and 7 patients with rheumatoid arthritis followed by 4 cases with bronchiectasis and 1 case with Crohn's disease also had AA positivity. Seven cases all with a clinical suspicion of plasma cell dyscrasias showed AL positivity in their biopsies. One case undergoing hemodialysis had b2MG positivity. Two cases with no definite diagnosis showed dual or triple positivity which could not be interpreted and classified immunohistochemically. Conclusions: The results of the present study indicate the predominance of AA amyloidosis associated with FMF and also suggest that routine immunohistochemical analysis of amyloidosis cases with certain ethnic background is sufficient to classify the subtype of amyloid fibril protein and the related disease. The epidemiological data presented here may also help the physicians from various countries to be aware of the prevalence of certain diseases related to ethnic origin.

Renal biopsies done in Zvezdara university hospital in Belgrade from 1995-2004

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PP

In the last 10 years (1995-2004), in Zvezdara university hospital 235 renal biopsies were done (118 female patients and 117 male). Out of those, 130 were proven to be glomerulopathies. Most frequent histological forms were: FSGS (22%), IgA nephropathy (19%), and mesangioprolipherative glomerulonephritis (16%). FSGS was found in grater percentage in male (16%), IgA nephropathy (IgAN) was more equal by gender (male : female = 8% : 11%) and mesangioprolipherative glomerulonephritis (MZPGN) was also almost equal by gender (male : female = 7% : 9%). Patients with FSGS most usually had nephrotic syndrome as a clinical manifestation (50%), those with IgAN most usually had acute nephritic syndrome (40%), same as patients with MZPGN (30%). Subanalysis included 20 patients from Pancevo, the center of petrochemical industry. Most frequent histological forms in this group were: MZPGN (30%), FSGS (25%) and IgAN (10%). It was found that there is no statistically significant difference between frequencies of FSGS in Pancevo and in the whole group, while IgAN was much less frequent in Pancevo and MZPGN was more frequent there.

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Epidemiology of glomerular disease based on renal biopsies: 25year observations of a single center

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PP

The aim of this study was to evaluate the relative frequency of glomerular diseases diagnosed and treated in our center from 1979 to 2004. In our country, no national registry of renal biopsies exists, therefore we had to restrict to our data. Present data analysis by histological classification was performed according to sex, age at the time of biopsy, clinical presentation and seasonal distribution. Over the last 25 years, 1296 sequential patients (712 males, 537 females), 13-84 years old, underwent renal biopsy. Criteria for performing the biopsies were: nephrotic syndrome, nephritic syndrome, acute renal failure (ARF) caused by non obvious reason, systemic diseases affecting the kidney and heamaturia of glomerular origin. Membranous glomerulonephritis was the most common cause of primary nephropathies (22.06%) followed by various classes of Lupus nephritis (13.42%) and IgA nephropathy (IgAN) (9.64%). Other causes were: minimal changes disease (8.8%), systemic vasculitis (8.56%), proliferative glomerulonephritis (8.02%), focal segmental glomerulosclerosis (6.86%), acute tubular necrosis (4.16%), amyloidosis (3.24%), glomerulosclerosis (2.93%), post infectious glomerulonephritis (1.85%), diabetic nephropathy (1.08%), other rare causes (9.33%). Based on the above findings we conclude that: 1. Nephrotic syndrome was the main reason for performing a renal biopsy. 2. Renal involvement in systemic disease was the second most common reason for biopsy and among those, lupus nephritis was the main histological type. 3. Primary membranous nephropathy was the most common glomerulonephritis (22%) as well as the main cause of nephrotic syndrome. 4. There was a significant increase in the prevalence of post infectious glomerulonephritis during the two large immigration flows in our country that took place in 1988-1990 and 1991-1993. From a total of 24 patients with post infectious glomerulonephritis, 23 were males and 17 cases occurred during these periods. 5. IgA nephropathy had seasonal peaks during November, February and March, related to upper respiratory system infections. 6. Acute tubular necrosis was the main cause of acute renal failure of undetermined cause.

One year follow up of renal functions in Balkan endemic nephropathy families

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PP

Balkan endemic nephropathy (BEN) is familial, chronic tubulointerstitial disease with an insidious onset and asymptomatic, slow progressive course. The present study was undertaken with the aim to find out whether new persons with renal disorders can be detected among healthy members of endemic families in village Šopić (Kolubara River region, Serbia). Study involved 44 members of five endemic families that had no history of renal disorders. The objective survey and laboratory analyzes that enabled determination of kidney functions (creatinine clearance, proteinuria, urine specific gravity and osmolality, fractional sodium excretion (FENa), percentage of tubular phosphate reabsorption (TRP), urine N-acetil-D-glikosaminidaze and intestinal alkaline phosphatase) were done in all examined persons three times in the 6-months intervals.

In the first examination hypertension was detected in 23 (52%) person, decreased creatinine clearance in two, proteinuria in 10 persons, proteinuria and tubular disorders in 6, hypertension, proteinuria and/or tubular disorders in 9 persons. Analysis of the results obtained by three check-ups undertaken during on year showed that proteinuria and tubular disorders appeared intermittently in a half of examined endemic family members. According to Danilovic's diagnostic criteria three of examined persons fulfilled criteria for diagnosis of BEN and another two for BEN-suspected persons.

In conclusion, three check-ups conducted in 6- months intervals in previously healthy members of five BEN families detected various renal disorders including renal hypofunction. This indicated that the disease is still present in endemic foci in Kolubara region and that systematic check-ups of BEN families could be useful for early detection of disease.

Activity of different ecto-enzymes in renal ischemia

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PP

The vast amount of data demonstrated that activity of different renal tubular ecto-enyzmes could be very sensitive marker of acute renal failure. In this study the activity of brush-border ecto-enzymes including aminopeptidase A (APA), aminopeptidase N (APN), dipeptidyl peptidase IV

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(DPP IV) as well as divalent cation ecto-ATPase and 5'-nucleotidase was estimated in rat kidney after 30 minutes of renal ischemia. Ischemic acute renal failure was induced in male Sprague-Dawley rats after unilateral ischemia-reperfusion of the left kidney of renal artery clamping for 30 min. The enzyme activities were determined 2 and 24 hours after renal ischemia in 10% kidney cortex homogenates, upon addition of corresponding substrates (5 mM of Glu-p-nitroanilide for APA, 1,5 mM Ala-p-nitroanilide, Gly-Pro-p-nitroanilide for DPP IV, 3 mM of ATP for Mg2+-ATPase and 3 mM AMP for 5'-nucleotidase). The activity of aminopeptidase A, APN and DPP IV remained unchanged 2 and 24 after ischemia. Group 5'-nucleotidase Mg2+-ATPase Control 44.41 + 5.56 86.69 + 12.01 Ischemia 2 h 54.96 + 2.89** 63.70 + 9.80** Ischemia 24 h 73.29 + 11.91* 54.72 + 7.64** * - $p < 0,001$ vs control; ** - $p < 0,01$ vs control The activity of 5'-nucleotidase was significantly increased 23.7% for 2 h and 65.0% for 24 h compared to control group. At the same time the activity of Mg2+-ATPase was reduced 26.5% for 2 h and 36.8% for 24 h. These results indicate that brush-border enzymes are not affected with acute renal failure induced by 30 minutes renal ischemia. Considering that adenosine plays an important role in the regulation of renal blood flow and glomerular filtration rate, the reduction of divalent cation ATPases activity could be the consequence of decreased renal adenine nucleotides pool.

The role of flavonoids in different model of experimentally induced acute renal failure

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PP

In spite of different etiological causes, acute renal failure (ARF) is followed by intensive oxidative stress. Antioxidative activity of flavonoids is based on the scavenging of free radicals and other oxidizing intermediates, on the chelation of iron or copper ions as well as on the inhibition of oxidases. There are contradictory data about renoprotective or nephrotoxic effects of different flavonoids which depends on their concentrations used in the experiments. The aim of this study was to examine the effects of flavonoids (quercetin and sylimarin) on parameters of oxidative damage and antioxidative factors in different models of ARF. All experiments were performed on male Sprague Dawley rats. Ischemia was induced by ligation of a. renalis with different time intervals of reperfusion (2 and 24 hours). In myoglobinuric model of ARF, glycerol (50%, v/v) was injected im. (8 ml/kg). Uremic ARF was induced by bilaterally ligated ureters. Quercetine and sylimarine were injected ip. two hours before all three experimental procedures. In all investigated models oxidative damage in kidney tissue, red blood cells (RBC) and plasma was confirmed by elevated concentration of malondialdehyde (MDA) and reactive carbonyl derivatives (CRD). Quercetine and silymarine, demonstrate significant antioxidative effects in kidney tissue and RBC, diminishing oxidative stress. However, in plasma, probably because of the presence of transition metals they express prooxidative properties. These results suggest that quercetine and sylimarine reduce renal oxidative injury and facilitate repair. Protective effects of flavonoids (quercetine and silymarine) confirmed in this experimental study, offer many therapeutically opportunities in kidney disease treatment based on oxidative stress.

Correlation between sera levels of sVCAM-1 and severity of kidney lesions in patients with lupus nephritis

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PP

We determined sera concentrations of soluble vascular adhesion molecule-1 (sVCAM-1) in group of 80 patients with SLE (including 30 patients with lupus nephritis). Our aim was to investigate correlation between level of sVCAM-1 and degree of disease activity and severity of lupus nephritis. By using ELISA procedure we determined sera levels of sVCAM-1 in 80 patients with SLE and in group of 27 healthy volunteers. Patients with SLE had significantly higher sera levels of sVCAM-1 comparing healthy controls ($p < 0,001$). Patients with disease in active phase had higher sera levels of this adhesive molecule comparing patients with disease in phase of remission ($p < 0,001$). There was high positive correlation between sera levels of sVCAM-1 and concentration of anti-ds DNK antibodies in sera of patients with SLE ($r = 0,77$, $p < 0,001$) and there was also negative correlation between sera levels of sVCAM-1 and sera concentrations of C3 and C4 component of complement ($r = -0,64$, $r = - 0,58$). In group of patients with lupus nephritis were detected significantly higher sera concentrations of sVCAM-1 comparing patients without nephritis ($p < 0,001$). Using WHO classification, patients with lupus nephritis were systematized in three categories: class II (5 patients), classes III and IV (18 patients) and class V (7 patients). Patients with class III and class IV of kidney changes had significantly higher levels of sVCAM-1 comparing patients with class II of kidney changes. In the same time, in group of patients with activity index of kidney changes (AI) over 4 sVCAM-1 sera levels

were significantly higher comparing group with AI < 4. Sera level of sVCAM-1 is reliable parameter in evaluation of autoreactivity degree in SLE. At the same time, sVCAM-1 sera level can be used as a reliable marker in evaluation of renal lesion extensiveness in SLE.

Enterococcal virulence factors and antibiotic resistance in enterococci isolated from urine samples

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PP

Hemolisyn, enterococcal surface protein (Esp), aggregation substance and gelatinase are some markers that have been proposed as possible virulence factors of enterococci. The aim of this study was to detect the presence of hemolysin, gelatinase and enterococcal surface protein in enterococci isolated from urine and to determine their susceptibility to antimicrobial agents. A total of 50 strains of Enterococcus spp. isolated from urine samples were examined. UTI agar (Oxoid) was used for isolation and identification of the strains as Enterococcus spp. Hemolisyn production was detected phenotypicaly on Columbia CNA agar as zone of b-hemolysis around the streak. Production of gelatinase was determined as clear halo around the colonies on tripticase soy agar supplemented with 1,5% skim milk. Esp was proved by detection of esp gene using PCR after DNA extraction (by Shankar). Antibiotic sensitivity to ampicillin, ceftriaxone, vancomycin, nitrofurantoin and ciprofloxacin was examined by agar diffusion method. In 16 strains (32%) all virulence factors were present. Two factors were found in 19 (38%) strains and only one in 11 strains. There were only 4 strains without any virulence factor. Esp was the most frequently determined factor (in 38 isolates). All strains were susceptible to vancomycin and nitrofurantoin; 12 isolates were resistant to ampicilin, 19 to ceftriaxone and 14 to ciprofloxacin. There was no relationship between virulence factors and resistance to some antibiotic.

Sevelamer in pre-dialysis patients

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PP

Hyperphosphatemia and dyslipidemia are very common and clinically significant conditions in patients with end stage renal disease. Hyperphosphatemia is a major factor in the development of secondary hyperparathyreoidism and is associated with increased mortality in dialysis patients specifically death because of cardiac causes. The aim of our study was to establish the efficacy and safety of sevelamer in pre-dialysis patients. In this retrospective study 12 pre-dialysis patients included under sevelamer treatment from May 2001 untill May 2004. The indication in order to initiate treatment was: hyperphosphatemia, digestive intolerance in calcium blockers, hypercalcemia. Males were:5/12(42%), with mean age:58 years (average:28-75y). Their primary disease was: chronic glomerulopathy in:4/12 (33%), diabetic nephropathy in:4/12 (33%), polycystic Kidneys in:2/12 (17%) and chronic interstitial nephritis in:2/12 (17%). The patients were measured periodically every three months. The average dose of sevelamer was: 1,5-2 g/d. From the total of 12 patients 4 were being treated initially with sodium bicarbonate (33%) and 9/12 (75%) with statins. In our results the mean laboratory data in the initiation and in the end of the study showed a tendency of lowering the levels of serum phosphorus, the CaxP products and the cholesterol levels which was statistical significant in the end of the study. In the end of our study sodium bicarbonate were taken from 6/12(50%) of the patients and statins from 55%. We conclude that sevelamer is efficasy in pre-dialysis patients in a low dose in comparison with the patients in dialysis. An advantage is also the less use of statins in these patients.

Disc-diffusion and agar-dilution tests in detection of nalidixic acid resistance of uropathogenic escherichia coli

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PP

The resistance of the uropathogenic Escherichia coli to quinolones is an increasing problem in the treatment of uncomplicated and complicated urinary tract infections. This may be due to the development of resistance during treatment of an infecting strain that already had diminished susceptibility to quinolones. The aim of this study was to determine susceptibility to nalidixic acid of uropathogenic E. coli comparing the disc-diffusion and agar-dilution tests.

A group of 31 isolates of uropathogenic E. coli from the urine of 31 adult patients (20 female, 11 male) with community-acquired urinary tract infection were examined. The disc-diffusion method was used to resolve the susceptibility to nalidixic acid (30mg); agar dilution method was used for determining MIC to nalidixic acid, according to break points given by NCCLS (<16mg/ml - susceptible; 32-64mg/ml - low level of resistance; >128mg/ml - high level of resistance).

From, the total number of 31 isolates, 8 (25.8%) were susceptible and 23 (74.2%) were resistant to nalidixic acid, using agar-diffusion method. The examination of MIC to nalidixic acid in 31 strain, revealed that 22 strains (71%) were high resistant (>256 μg/ml), 1 strain (3.2%) showed

low level of resistance (64 μg/ml) and 8 strains (25.8%) were susceptible to nalidixic acid (MIC ranging from 1 to 2 μg/ml). Comparison between these two tests and correlation of the data demonstrated a high degree of agreement. Resistance to nalidixic acid is frequent among uropathogenic E. coli and this is a risk factor for the development of therapeutic failure. In order to prevent spreading of quinolone resistant E. coli, it is necessary to analyze the susceptibility to other members of the quinolones.

Effect of the type of proteinuria on four methods for total protein determination in urine

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PP

Accurate measurement of urinary proteins is crucial for the diagnosis and the treatment of renal disease and various heart disorders associated with proteinuria. It has been recommended that total protein should be determined by a version of the biuret procedure which yields equivalent chromogenicity with albumin and globulin fractions, because it is based on the reaction of peptide bonds with biuret reagent. In the present study four commonly used methods for the determination of total urinary protein in urine were compared. These were two biuret methods using different precipitants (trichloroacetic acid or ethanolic phosphotungstic acid), turbidimetric method with sulphosalycilic acid and the Bio-Rad Pyrogallol Red test kit. In the first two methods after precipitation with trichloroacetic acid or ethanolic phosphotungstic acid reagent tubes were centrifuged at 4000 rpm for 15 min. The protein content in the 30 urines was evaluated by horizonthal gradient sodium dodecylsulphate polyacrylamide gel electrophoresis coupled with Coomassie Blue R-250 staining. Electrophoretic patterns were described as normal (physiological) if only albumin and traces of low molecular weights proteins were observed. Examples of abnormal proteinuria were grouped into glomerular and tubular proteinuria, depending of the predominance of high or low molecular weight proteins. Patterns with proteins migrating both faster and slower than albumin were described as mixed proteinuria. The results obtained by using biuret method with trichloroacetic acid (biuret-TCA) or ethanolic phosphotungstic acid as precipitants (biuret-EPA) correlated best with the Pyrogallol red method ($r= 0.996$; $p<0.001$ and $r =0.997$; $p<0.001$) but not as well with turbidimetric method ($r=0.856$; $p<0.001$ and $r=0.777$; $p<0.001$). The turbidimetric method correlated not as well with Pyrogallol red method ($r=0.819$; $P<0.001$). In urines with tubular and mixed proteinuria the use of biuret-TCA method led to significantly lower results relative to the biuret-EPA, turbidimetric and Pyrogallol red method. In urines with physiological and glomerular proteinuria similar results were obtained with biuret-TCA and biuret-EPA method and correlated well with results from turbidimetric and Pyrogallol red method, with lowest results obtained with biuret-TCA methods. Results suggested that protein precipitation appeared complete when the ethanolic phosphotungstic acid reagent was used. Discrepancies between methods appear to have resulted from incomplete precipitation of low molecular weight proteins by trichloroacetic acid.

Urinary excretion of n-acetyl-beta-glucosaminidase in preeclampsia

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PP

N-acetyl-beta-glucosaminidase (NAG) is a lysosomal enzyme synthesized in the renal proximal tubular cells and excreted in the urine. Its increased activity is a sensitive indicator for tubular damage. In the present study urinary activity of NAG was studied in women having preeclampsia (gestational hypertension plus pathological proteinuria). Three groups were formed: 21 healthy normotensive nonpregnant women (group 1) aged 18-40 years, 37 pregnant women with normal arterial tension (group 2) aged 19-38 years, 20 pregnant women with preeclampsia (group 3) aged 23-40 years. NAG activity in urine samples was determined according to Horak et al. by spectrophotometric method. The results were expressed in units per gram of urinary creatinine. The concentration of urinary creatinine was analyzed with colorimetric method. The difference between arithmetic means was analyzed using Student's t-test. Statistical significant difference was found in urinary NAG in pregnant women in comparison with nonpregnant women (9.41 +/- 4.03 v. 3.66 +/- 0.91 U/g creatinine, $p<0.001$) as well as between pregnant women with normal arterial tension and women with preeclampsia (9.41 +/- 4.03 v. 33.90 +/- 16.33 U/g creatinine, $p<0.001$). In women having preeclampsia a positive correlation between NAG activity and concentration of total urinary proteins was found ($r=0.80$, $p<0.01$). The results from the present study have shown that determination of urinary activity of NAG during pregnancy can be useful for the early diagnosis of preeclampsia, before the glomerular and tubular lesions characteristic for severe preeclampsia take place.

PP = Poster Presentation; OP = Oral Presentation

The soluble serum transferrin receptors in type 2 diabetic patients with proteinuria

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PP

To record the difference in the level of soluble serum transferrine receptors (sTfr) in type 2 diabetic patients with selective nephrotic proteinuria (SNP) compared to patients with nonselective nephrotic proteinuria (NNP), and confirm the thesis that the sTfr is good marker of iron status and erythropoesis in these patients. Methods: There were 63 type 2 diabetic patients with diabetic nephropathy and proteinuria included in the study. The patients were divided in to 3 groups regarding largeness and selectivity of proteinuria. Twenty-four patients had SNP, and nineteen patients had NNP. Control group constitute twenty patients with selective nonnephrotic proteinuria <2.5 g/day. In all groups were measured: erythrocyte cont, hemoglobin level, mean cell volume, C reactive protein, fibrinogen level, serum iron level, total iron binding capacity, unbound iron binding capacity, iron saturation, serum ferritin, creatinine clearance, serum protein electrophoresis, proteinuria (biuret), urinary protein immunoelectrophoresis, and sTfr. The sTfr were detected in serum using ELISA techniques, and quantified in mg/L. Results: We recorded significant difference in sTfr level between NNP group and SNP group, and between NNP group and control group (NNP 2.0+0.8; SNP 2.9+1.8; control 2.7+1.0; $p<0.05$; $p<0.05$), and significant difference in biuret and fibrinogen level between NNP and SNP group in compare to control group ($p<0.05$; $p<0.05$). Conclusion: Significantly lower sTfr in NNP group in compare to SNP and control group, and in absence of significant difference in both iron and erythropoesis markers and factors with possible negative contribution according to both of them (e.g. inflammation, stage of renal insufficiency), is probably result of loss of sTfr through heavily and largely damaged glomerular capillary membrane in NNP group. Therefore, sTfr is not good marker of iron status and erythropoesis in type 2 diabetic patients with NNP.

Adrenal glands magnitude and function in visceral obese women

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PP

Visceral obesity is associated with alteration of the hypothalamic-pituitary-adrenal (HPA) axis characterized mainly by an increased sensitivity to stimuli and decreased sensitivity to inhibition, and disturbed adrenal glands function. The relationship between adrenal glands magnitude and visceral body fat distribution has not yet been discovered precisely by anyone. Adrenal glands magnitude has to be dependent on adrenal glands function. The aim of this study was to discover the association of visceral body fat distribution (BFD) with the disturbance of the adrenal glands function and adrenal glands magnitude. Adrenal glands surfaces (AGS) and volumes (AGV) were determined in 56 women by adrenal glands echotomography. Adrenal glands function was determined by the percentage of cortisol suppression (CS%) during OGTT in 135 healthy women, and the percentage of ACTH suppression (ACTH%) was also determined in 55 women. Body mass index (BMI) was determined also. The examinees were divided in 3 groups according to their BFD determined by their anthropometric indexes: 1st group with normal BFD with waist/hip ratio (WHR)<0,85 and waist/thigh ratio (WTR)<1.45; 2nd group with moderate visceral obesity with WHR (0.85-1.0) and WTR (1.45-1.7) and the 3rd group with extreme visceral obesity with WHR> 1.0 and WTR>1.7. WHR and WTR correlated significantly positively (p<0,0001) with adrenal glands surfaces and volumes. WHR correlated significantly negatively with CS% (p<0,0001) and ACTH% (p<0,008). WTR correlated significantly negatively with C% (p<0,0001) and ACTH% (p<0,004). BMI in the 1st gr. was 27+8 kg/m2, in the 2nd gr. was 36+8 kg/m2, and in the 3rd gr. was 40+7,9 kg/m2, that confirmes the 3rd group as obese. CS% was 61.81+10% in the 1st gr., (52.43+40%) in the 2nd gr. and (40.64+9.92%) in the 3rd gr. CS% was significantly different between the groups, and significantly reduced in the 3rd extreme visceral obese group, compared to the 1st and 2nd group. ACTH% was 48,65+34.4 % in the 1st gr., (34.9+40%) in the 2nd, and (6,22+67%) in the 3rd gr. ACTH% was lowest in the 3rd group, and significantly different between the groups. Adrenal glands surfaces were significantly higher in the 3rd gr. compared to the 1st and 2nd gr. Left and right AGV were 1.99+1.37cm3 and (1.74+0.69cm3) in the 1st gr., (3.92+3.31cm3 and 4+3.9cm3) in the 2nd gr. and (6+3.78cm3 and 6.25+3.89cm3) in the 3rd gr. Adrenal glands volumes were the highest significantly (p<0,0001) in the 3rd extreme visceral obese group compared to the other two groups. CS% correlated significantly negatively to adrenal glands volumes (p<0,0001) and adrenal glands surfaces (p<0,001). Adrenal glands magnitude was in a positive relation to the disturbance of the adrenal glands function characterized with reduced cortisol and ACTH suppression during OGTT, as well as to the visceral body fat distribution. Adrenal hyperplasia in visceral obesity could be discovered with great certainty and diagnostic security with echotomographic assessment of the adrenal glands. Extreme visceral obesity is characterized with significantly increased adrenal glands surfaces and volumes and reduced cortisol and ACTH suppression as indicators of disturbed adrenal

PP = Poster Presentation; OP = Oral Presentation

glands function and decreased sensitivity to inhibition of the HPA axis discovering the central origin of the adrenal glands dysfunction.

Functional hypercorticism relations to the metabolic syndrome

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PP

Functional hypercorticism is characterized with visceral body fat distribution (VFD), hypersensitive hypothalamic-pituitary-adrenal axis with increased sensitivity to stimuli and decreased sensitivity to inhibition, reduced cortisol suppression during OGTT, hyperplasia of the adrenal glands and indicates positive dependence on the age. The aim of this study was to determine the relationship of the functional hypercorticism, expressed as a percentage of reduction of basal cortisol levels (C%) during OGTT, with the parameters of the metabolic syndrome: homeostatic assessment model (HOMA) as an index of insulin resistance, insulin levels, lipid profile, blood pressure, body fat distribution as well as adrenal glands magnitude. The examinees were 127 healthy women, divided in 3 groups according to C%: 1st gr. with C%>60% (good suppression), 2nd gr. with C% 40-60 % (moderate suppression) and 3rd gr. with C%<40% (very bad suppression). Body mass index (BMI) was determined as well as body fat distribution was determined by waist/hip ratio (WHR) and waist/thigh ratio (WTR) and HOMA was used to determine insulin sensitivity. Lipid profile triglyceride levels (TG), total cholesterol (TH), HDL chol., LDL chol, TH/HDL, LDL/HDL, TG/HDL. Adrenal glands surfaces and volumes were determined by echotomography. HOMA values were 3.94+2.56 in the 1st gr., (5.77+2.96) in the 2nd gr. and (8.55+7.22) in the 3rd gr. HOMA values were significantly (p<0.0001) highest in the 3rd group. Insulin levels in the 1st gr were 17+11 mU/ml, in the 2nd gr were 23.6+11 mU/ml and in the 3rd gr were 30.96+33 mU/ml. The 3rd group with functional hypercorticism was hyperinsulinemic and insulin resistant with significantly (p<0,0001) highest HOMA and insulin values. The anthropometric index of VFD, WHR was 0.89+0.009 in the 1st gr, (0.98+0.009) in the 2nd gr., and (1.03+0.1) in the 3rd group. WTR in the 1st group was 1.49+0.14, in the 2nd gr was 1.66+0.14 and in the 3rd gr was 1.79+0.19. The 3rd group with functional hypercorticism was characterized with increased values of anthropometric indexes of VFD. WHR and WTR were significantly (p<0.0001) highest in the 3rd group. BMI was 30+8 kg/m2, 39+9 kg/m2, and 40+9 kg/m2 in the correspondent groups. Sistolic blood pressure was 120+16 mmHg, in the 1st gr, (135+19 mmHg) in the 2nd, and (139+19 mmHg) in the 3rd gr. It was significantly (p<0.001) highest in the 3rd group. Right adrenal gland volume was 3+2 cm3 in the 1st gr., (5.1+3 cm3) in the 2nd gr. and (6.64+3.74 cm3) in the 3rd gr. Left adrenal volume was 3+2.9cm3 in the 1st gr., (5.1+2 cm3) in the 2nd gr. and significantly highest in the 3rd group (6,43+3.74cm3). TG levels were significantly different between the groups p<0.008 (1.25+0,56; 1.57+0.68 and 1.78+0.82 mmol/l), as well as HDL ch (1.13+0.46; 1.08+0.26; and 0.9+0.2 mmol/l p<0,05). The 3rd group with functional hypercorticism was characterized with dyslipidemic profile. Conclusion: functional hypercorticism is characterized with hyperinsulinemia and insulin resistance (increased HOMA values), obesity, visceral body fat distribution, increased adrenal glands magnitude, increased blood pressure and dyslipidemic profile. This indicates that the functional hypercorticism which is characterized with the disturbance of the adrenal glands function, namely reduced C% during OGTT and increased adrenal glands magnitude is positively related to the parameters of the metabolic syndrome and it could be used as an important diagnostic parameter of the metabolic syndrome.

Correlation between T lymphocyte subpopulation and disease activity in SLE

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PP

SLE is a complex disorder of multifactorial origin, which causes activation of T and B cells. Aim of the study: To examine and determinate if peripheral blood T Lymphocyte subpopulations are related with disease activity in SLE. Methods: Peripheral blood mononuclear cells were prepared from the blood of 41 lupus patients (ARA criteria) with active or inactive phase of the disease. Age of the patients was 15-71 and disease duration from 2-19 years. The results were compared with a group of 20 healthy patients. This group is regularly followed up at the Department of Rheumatology at the University of Tirana. Peripheral blood subpopulations of lymphocytes were determined by immunofluorescence analysis using conjugated monoclonal antibodies CD3, CD4, CD8. Lupus patients with active disease demonstrated a significant decrease in CD3 compared with inactive lupus (p=0.07) and healthy controls (p=0.02). The same result was demonstrated also for CD3 and CD4. Conclusion: Low levels of T subpopulation are characteristic of active disease in SLE.

Application of modified Phast system SDS-PAGE for evaluation of proteinuria/hematuria

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PP

SDS-PAG electrophoresis of urinary proteins is a relatively old method, which has been in use in the clinical nephrology practice since the 80-ies. It was introduced in 1997 at the Institute of Medical and Experimental Biochemistry, Medical Faculty-Skopje, on Multiphor II Units, LKB system and since then it has been routinely used in clinical practice. In order to achieve the compatibility of our electrophoretic separations with European trends, Phast System (Amersham) for SDS-PAGE was implemented. Although this system is an ideal automated device for electrophoretic separation, it has not been widely used in clinical chemistry laboratories. In addition to the need for long and intensive education of the staff, the other reasons are as follows: - difficulties related to providing gels, transport, storage, their price, which demotivate laboratories to use it. In the palette of gels produced by the firm Amersham, PhastGel Gradient 4 - 22% for SDS-PAGE is not offered, which gradient allows parallel separation of serum, urinary and liquor proteins. In our laboratory the gel with this gradient has been shown as universal one with excellent separation power. For animation and wider use of Phast System in our bigger biochemical clinical laboratories we suggest a simple, practical and economic procedure for preparation of all types of Phast System gels, including 4 - 22% PhastGel Gradient. For that purpose following devices and equipment are necessary: magnetic stirer, peristaltic pump with control flow (0,5-1 ml/min), gradient mixer for solution with volume of 15 mL, specially constructed glass matrix for preparation of 6 gels at the same time with dimensions 43x50x0.5 mm, gel bond PAG film with dimensions identical with the gels, analytical balance and pH meter for buffers preparation. For the preparation of 4 - 22% PhastGel Gradient we use identical solution as for gels used for separation on Multiphor II Units, LKB system. Gels might be stained with Coomassie Blue R-250 or with silver staining technique. The quality of the electrophoretic separations does not differ from gels produced by firm Amersham; the separation ability is also improved, especially for high molecular weight proteins. The fact that we use home made PhastGel Buffer Strips (10x41x6 mm) prepared with 3% agarose or with 6% polyacrylamide (which have been shown as good replacement for agarose PhastGel Buffer Strips) is confirmation that laboratory preparation of gels allows its use in electrophoretic techniques. The ability for independent creation and changing of the type, concentration and pH of buffers, as well as the density of the molecular sieve of gels, only increase the justification for laboratory preparation and use of gels for different clinical applications and scientific purposes.

Surveillance of hepatitis B and C in hemodialysis patients in Greece: a nation wide survey

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PP

A survey of all renal units in Greece was carried out in order a) to register all the HCV and HBV infected patients, b) to establish their current control and prevention practices and c) to identify needs for further intervention. Methods: Postal questionnaires were sent to the heads of all renal units in Greece (n=118). Participation rate was 100%. Results: Among 7016 patients on maintenance hemodialysis (115 units) and 707 patients on peritoneal dialysis (35 units), the prevalence of anti-HCV in hemodialysis units was 8.4% (range 0-51.7%). The mean incidence was 0.32 per 100 person years (range 0-6%). The prevalence of anti-HCV among patients on peritoneal dialysis was 2.3%. Regarding HBV infection, the prevalence of HBsAg was 2.9%, while among patients on peritoneal dialysis was 2.3%. Dedicated dialysis machines (66.4%) and segragation in a separate room (29.1%) were common approaches to patients who were anti-HCV (+), while in 26.4% of the units a dedicated nurse treated only the HCV infected patients. The majority of units (93.2%) reported an active immunization programme against HBV. Conclusion: The overall assessment of the efforts for the control of these infections in hemodialysis setting in Greece is quite satisfactory as their prevalence has been significantly reduced from the reported levels of 30% reported during 90's.

Ultrasonographic abdominal fat tissue thicknesses for nutritional assessment in chronic hemodialysis patients

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PP

Malnutrition is highly prevalent in hemodialysis patients and is associated with higher mortality in these patients. Practical and sensible indicators of fat and lean body mass are needed for assessment of malnutrition. We studied correlation of classical nutritional assessment methods, including biochemistry, anthropometry, bioelectrical impedance analysis (BIA) with ultrasonographic abdominal fat thickness measurements in chronic hemodialysis patients.

We studied 20 clinically stable chronic hemodialysis patients (14 men/ 6 women; mean age 47,1±14,9 years). Predialysis serum albumin, creatinin, urea, total cholesterol, triglyceride and transferrin were measured. Postdialysis skin fold thicknesses (SKF) which measured four regions were recorded. Fat tissue mass was calculated from SKF. BIA was performed 30 minutes after hemodialysis session by using a single frequency (50 kHz) device (Biodynamics corp, CA, USA). Abdominal subcutaneous (S) and preperitoneal (P) fat tissues were measured at their maximum (max) and minimum (min) thickness sites using a 10 mHz linear array transducer (ATL, Ultramark HDI 9, USA). Intraabdominal visceral (V) fat tissue thickness was measured just above the umbilicus using 3.5 mHz convex array transducer. The associations between ultrasonographic measurements and anthropometry, biochemistry, BIA variables were evaluated with Spearman's rank correlation (r).

The biceps and suprailiac SKF measurements showed good correlation with S_{max} (r=0.579, p=0.009; r=0.636, p=0.003; respectively) and P_{min} (r=0.623, p=0.004; r=0.716, p=0.001; respectively). Body fat estimated by SKF (20,9±6,4 kg) was correlated with P_{min} (r=0.664, p=0.002) and body fat estimated by BIA (18,6±6,7 kg) was correlated with S_{max} (r=0.507, p=0.027) and P_{min} (r=0.458, p=0.049). There was no correlation between V and other fat tissue indicators. Serum urea, creatinin and triglyceride levels also showed a relatively good correlation with ultrasonographic measurements especially S_{max}. Ultrasonographic abdominal fat thickness measurement is a practical, easy and inexpensive method and it can be used as additional tool for nutritional assessment in chronic hemodialysis patients.

Urolithiasis in children: a 6 year experience (1998-2003)

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PP

Urolithiasis is one of the oldest diseases even in pediatric patients. The prevalence of kidney stones is estimated to be 1:20.000 children/year. The medium age of onset is between 5-7 years. Aim: The aim of our study was to see the characteristic features, predisposing factors and therapeutic procedures for urolithiasis in children, as well as metabolic abnormalities especially hypercalciuria. Methods: We have performed a retrospective study only in one clinical centre, Padua, Italy. We involved 72 patients (46% of them with family history for kidney stones) in a 6-year-period (1998-2003). We have performed the detailed medical history, objective examination, sex, age of patients at the moment of onset of disease, laboratory examination, clinical signs at the moment of presentation in our centre, as well as concomitant pathologies and when possible the chemical composition of the stones. Results: Ratio male : female 1,4:1. Diagnostic medium age was 6 years. The most frequent symptom was the pain: back pain 33,3%, abdominal pain 19.4%, gross hematuria 19.4%, microhematuria 14%, urinary retention 9,7%, dysuria 8.3%, vomiting 11.1%, growth retardation 4.2%, hypertension 1.4%, spontaneous passage of renal calculi 5.5%, asymptomatic patients 4.2%. Infectious stone was found in 23.6% of cases. All the patients had performed the abdominal ultrasonographic examination and it was found that 84% of them had the stone localised on the upper part of the urinary tract. The chemical composition of the stone was studied only in 51% of cases from which 57% resulted to be calcium oxalate and phosphate stones. Concomitant disorders and malformations were presented in 21% of patients (vesicoureteral reflux in 3 patients, obstruction of pelvoureteral junction in 2 patients, posterior urethral valve 1 patient etc). Metabolic abnormalities were found in 75% of patients: hypercalciuria 29%, hyperoxaluria 12%, hyperuricosuria 5.5%, cystinuria 5.5%, hypocitraturia 50%. The invasive treatment of choice was found to be the lithotripsy (ESWL 19 patients/27%). Surgical removal in 2 patients (3%), endoscopic extraction in 6 patients (8%), spontaneous passage occurred in 13 patients (18%), conservative treatment in 30 patients (42%). Conclusions: the medium age of patients with metabolic stones was found to be higher (7,1 years) than the medium age of patients with infectious stones (3 years). The familial occurrence of kidney stones was found to be important (46%). The ultrasonographic examination is the most important one. The stones composed by calcium oxalate and calcium phosphate were found to have the highest percentage. Metabolic abnormalities were found in 75% of patients and hypercalciuria was the most common disorder. Hypocitraturia is considered to be a risk factor the calcium stones.

Abscessus of the kidney associated with acute renal failure: a case report

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PP

The aim of the presented case is to reveal the progression and dissemination of the local septic focus in the kidney causing renal failure and development of systemic shock including complicated septico-piemic condition. A 69-year-old female patient from Tetovo was evaluated, whose initial symptoms were: severe lower back pain, fever and high temperature. She was primarily hospitalized in our department, in a very bad general condition, intoxicated, dehydrated, with clinical and laboratory analysis of ARF. The initial ultrasound revealed persistence of tumor mass lesion with central colicvation, located on the left kidney. The next days there was a progression towards large subcortical abscess formation filled with dense liquid content. The ultrasonography examination showed paranephritic progression of the process which was confirmed with CT of the abdomen. The laboratory analysis proved high leucocytes with increase of the degradation blood products and piuria. Septicemia with oligoanuria were the main reasons for transferring the patient into the Urology Department of the Medical Center in Tetovo and later to the Urology Clinic at the Clinical Center in Skopje. Nephrectomy was performed. The progression of the paranephritic process was the main reason for the colon ascendens resection. Although the post-surgical recovery was very slow, the biochemical and hematological laboratory analysis resulted in stabilization of the values and established diuresis. The case report has shown the importance of an immediate diagnosis of infectious complications associated with ARF for further efficient treatment towards avoiding lethal outcome which has been reported in many clinical studies as having high percentage of mortality.

Catheter-related candidemia: a case report

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PP

Several kinds of Candida species may initiate different opportunistic diseases, especially to immunity-deficient patients. Candidemia means presence of this funga in the blood. The intravascular catheters are the most important and most common source of Candida. Our aim was to present a case with Candidemia and to speak in favour of the blood-culture as a diagnostic procedure for discovering the etiology of high-temperature and fever state. Methods and materials: A 37-year-old patient (A.T.) had CRF (Chronic Renal Failure) and was under treatment of haemo-dialyses for 17 years. Three years ago, a tunnelised jugular catheter was applied as a vascular access. Because of the high temperature, a blood-culture was processed and Hemoline-Biomerieux containers were used. After the proper incubation, grown colonies were identified as Candida spp. A wide range of examinations were made in order to find inner sources, but none was positive. The entire procedure was repeated after one week. Because of the patient's condition and lack of other methods for haemo-dialyses, we started with a conservative therapy (Flukonazol). Results: During the treatment some improvements were achieved, but not a complete remission i.e. the blood-culture was positive again. Discussion: IV catheter-related Candidemia should not be treated conservatively as the results are not successful. Therefore, the removal of the catheter was inevitable.

Aggravating primary glomerulonephritis on pregnancy

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PP

Aim: Contradictory results were presented about the effects of pregnancy in patients with primary glomerulonephritis.
Methods: We investigated 3 pregnant patients that had nephrotic syndrome. One of the patients had membranoproliferative glomerulonephritis (MPGN) type II and the others patients had focal segmental glomerulosclerosis (FSGS) before the pregnancy. The pregnancy of all patients was first. All of them were not proteinuria before pregnancy. They applied to our clinic at third trimester.
Results: Mean age of our patients was 26±5.3 (22-32) years, mean serum albumin was 2.0±0.1 (1.9-2,2) gr/dl, mean proteinuria was 2488±494 (2014-3000) mg/day, mean creatinin clerance was 76.5± 29.4 (42.6-95) ml/min. Antihypertensive and albumin treatment were used to all patients at third trimester but any immunosupressive treatment was not used. Pregnancies of all patients were ended with living birth at 35th weeks. While cesarean was used to two patients, induction was performed to only one patient. Infant's mean birth weight was 2133±230,9 (2000-2400) gr. First minute apgar score was 8 in all infants. Both proteinuria and serum creatinin levels increased at postpartum period in all patients. Serum albumin levels increased from 2.6±1.2 to 2.8±0.6 at postpartum period.
Conclusion: Patients with primary glomerulonephritis may progress during pregnancy period. Thereby, these patients must be followed carefully.

Outcomes of pregnancies in four predialytic patients with CRF

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PP

Aim: Pregnancy can cause important problems both to mother and fetus in patients with chronic renal failure. While renal failure may progress in mother, pregnancy can menace mother life because of increasing blood pressure. Also, pregnancy can cause to growth retardation and early birth and fetal death can be often seen.

Method: In spite of the fact that CRF was diagnosed in patients, they became pregnant without doctor's control and didn't come control of nephrology out-patient clinic until third trimester. Pregnancies were continued because of patient's insistence. Outcomes of pregnancy and fetus were investigated in 4 patients that had CRF before pregnancy. Blood pressure, proteinuria levels and renal function of the patients were followed.

Results: The patients' mean age was 25± 5.3 (22-33) years. Their mean creatinin clearance was 20±9 ml/min and mean serum creatinine was 2.6±0.6 (2.2-3.5) mg/dl at the third trimester. Blood pressure was high at application time in all patients, only one except. Mean blood pressure was 150±25/102.5±17 mmHg at application time and mean proteinuria levels was 2075±943 mg/day in all patients. Blood pressures of all patients were controlled by antihypertensive treatment before the induction or cesarean. Blood pressure regressed normal levels in our all patients and proteinuria slightly decreased at postpartum first month. Pregnancies were ended living birth with cesarean at 34th gestational weeks in 3 patients. But, medical abortion was used to only one patient because of intrauterine growth retardation and uncontrolled blood pressure in mother. First minute apgar score was 8 in all infants. İnfants' mean birth weight was 1633±288 (1300-1800) gr. While renal failure increased more and more in all patients, CAPD treatment was used to only one patient at postpartum period.

Conclusion: In spite of all risks, pregnancy was ended with living birth in the 34th weeks in 3 of 4 pregnants. Low birth weight and growth retardation were determined in infants.

Coexistence of multiple sclerosis and systemic lupus erythematosus in one patient

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PP

The occurrence of both multiple sclerosis (MS) and systemic lupus erythematosus (SLE) has previously been described in several members within the same family and in twins of successive generations, but the finding of both diseases in one patient is a great rarity. We here report on a rare coexistence of MS and SLE both in a 8-year-old girl. Initially, she presented transitory left side hemi paresis and six months later she developed right optical nerve neuritis with amaurosis. After 14 months she manifested nephrotic syndrome and renal biopsy revealed membranous glomerulonephritis with "full house" immune complexes. The patient fulfilled diagnostic criteria of primary-progressive subtype of MS as well as SLE. Simultaneous occurrence of multiple sclerosis and SLE in our patient constitutes supporting evidence that similar immunological processes may be involved in the pathogenesis of the diseases.

A girl with ectopic ureter as cause of urinary incontinence

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PP

Urinary incontinence in girls due to ectopic ureter is an uncommon disease. Eigthty-five percents of the cases are associated to renal duplication. Continuous urine dripping together with normal micturition is the classical picture of ectopic ureter in girls. We here describe a 4-year-old girl with persistent incontinence. The diagnostic work-up included: ultrasonography (US), intravenous pyelogram (IVP) and renal scintiscan (DMSA) and did not approved the clinical suspicion for renal duplication. However, MRI showed occult duplex system on the right side and heminephretctomy has led to prompt disappearance of urinary incontinence.

Urinary infections in children's dispensary

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PP

The purpose of the article: To show the general carriers of urinary infections during 2004 in the Children's Dispensary in Delcevo. Materials and Methods: 50 children were enclosed in this investigation. All of them had clinical symptoms of urinary infection - raised temperature, disuretic disorders, lost appetite etc. Some additional investigations were made: laboratory, bacterial, ultrasonographic and radiological. Results: The following results were obtained: 17 children with urinary infection, 14 girls (82,35%) and 3 boys (17,63%). The most frequently isolated bacteria were: Esherichia colli - 9 children (52,49%), Staphilococus aureus - 4 children (21,04%), Proteus mirabilis - 3 children (17,63 %) and Enterococus - 1 child (5,87%). The ultragraphic investigation revealed that 3 of the children had microlithiasis and 1 child light stagnation. Because of relapsed infections in one child some

additional investigations were also made and the existence of VUR was confirmed. From all bacteriological analysis and received antibiograms it was evident that the sensitivity of the bacterium changed; there was also resistance to several used medicines and bigger sensitivity to third generational cephalosporins. Conclusion: Adequate approach, use of all available methods, and proper use of antibiotics lead to correct treatment of the urinary infections. Prompt detection of genetic malformations, regular monitoring of calculosis are the main requirements for safe prevention of parenchymal renal damages.

Arterial blood pressure in Kumanovo in the year 2004

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PP

This paper presents patients with high arterial blood pressure who were treated at the Department of Internal Medicine (hospitalization, day hospital, department for intensive care unit), city of Kumanovo during 2004 year. Parameters presented in the tables and figures show the number, clinical forms, sex, years, place of living, way of treatment of the patients with diagnosis high arterial blood pressure.

Renal colic - own experience from the department of internal medicine - Delcevo

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PP

Aim: To present the number of patients with renal colic, their diagnosis and treatment. Materials and methods: Daily evidence of patients in a period of one year. Results: 120 patients were analysed, 71 (59,17%) male and 49 (40,83%) female aged between 18 and 86. Biochemical examinations were made, echo of urinary system, TA measurements, native analysis of urinary tract, and in the patients with hydronephrosis I.V.U. Urinoculture was also made in patients with positive urine test. The cause for renal colic in 90 (75%) patients was urolithiasis, in 25 (20,83%) urinary infection and in 5 (4.17%) prostate adenoma accompanied by infection or hydronephrosis. In 45 patients urinoculture was performed and 20 (44,44%) of them were diagnosed positive. In 15 (75%) patients Echerichia colli was diagnosed, in 3 (15%) Pseudomonas aeruginosa and in 2 (10%) Staphilococus aureus. The patients with positive urinoculture were given antibiotics according to the antibiogram, spasmolitics and analgetics, and the remaining patients spasmolitics, analgetics and antirheumatics. Seven patients (7, 78%) with huge calculosis were treated in hospital with ESWL or surgically, and 9 patients (10%) had spontaneous elimination of calculus. Conclusion: The renal colic is frequent in the Department of internal medicine in Delcevo and it is very important to diagnose it early and treat it properly.

Antichromatin antibodies - a useful marker for lupus nephropathy

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OP

In this study we investigated the prevalence of both anti-dsDNA and anti-chromatin antibodies in a large series of patients with SLE in order to assess their clinical significance and, particularity, their value as a marker of lupus nephropathy. To determine the specificity of these antibodies for systemic lupus erythematosus (SLE), patients with other connective tissue diseases were tested for anti-chromatin antibodies. We studied 81 patients (42 of them with lupus nephropathy) with SLE (all fulfilled four or more of the 1982 ACR revised criteria for the classification of SLE), 22 patients with Sjogren's syndrome, 14 patients - with systemic sclerosis and 18 healthy blood donors from the blood bank of Medical Institute - MIA. Anti-chromatin antibodies of the IgG isotype were measured by a commercial semiquantitative enzyme linked immunosorbent assay, according to the manufacturer's instructions. Disease activity was assessed by the European Consensus Lupus Activity Measurement. Positive levels of antichromatin antibodies were detected in 58 patients (71,6%) with SLE (37 of them with lupus nephropathy). In contrast, they were found in only 2 (9,09%) patients with primary Sjogren's syndrome, in 1 patient (7,14%) with systemic sclerosis and in 0 (0%) healthy blood donors. Patients with antichromatin antibodies had a 1,63-fold higher prevalence of lupus nephropathy than those without these antibodies (88,09% vs. 53,84%). The mean level of anti-chromatin antibodies in patients with lupus nephropathy was 64 U and in patients without nephropathy 44 U. no differences in the prevalence of the other clinical manifestations were found among patients with and without antichromatin antibodies. The measurement of antichromatin antibodies appears to be a useful addition to the laboratory tests that can help in the diagnosis and treatment of SLE. These antibodies are both sensitive and specific for SLE and are a useful marker for an increased risk of lupus nephritis.

PP = Poster Presentation; OP = Oral Presentation

Amyloidosis

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OP

Amyloidosis is a group of diseases due to pathologic deposition of various insoluble fibrilllar proteins having an identical secondary structure (ß-pleated sheet) in the extracellular compartments of the body. When diabetes mellitus type II and Alzheimer's disease are taken into account, the prevalence of amyloidosis is obviously quite high. There are four types of amyloidosis: AL (light chain) amyloidosis, AA amyloidosis (secondary to chronic inflammation), $Aß_2M$ amyloidosis (secondary to long-term hemodialysis) and heredofamilial (ATTR) amyloidoses. The process may be focal, local or generalized whose clinical consequences are reflections of the involved organ(s). Some clinical features such as macroglossia (AL), nephrotic syndrome (AA), arthropathy ($Aß_2M$) or familial peripheral neuropathy (ATTR) may imply the type of deposit to a certain extend. A definitive diagnosis requires not only tissue confirmation (Congo Red staining with green birefringence under polarized light) but also genomic DNA and protein analyses and immunohistochemistry. Suitable tissue samples can be obtained from subcutaneous fat pad aspiration, rectal mucosa or renal biopsy. Neural or myocardial biopsies are rarely necessary. Serum amyloid P component (SAP) scintigraphy can visualise and demonstrate the amyolid burden of the patient, this procedure may also be useful to measure the response to treatment.

Amyloidosis is not regarded as an irreversible pathology anymore. Detection of the precursor protein such as SAA or mutated transthyretin is an important step in therapeutic decision making since further progression of the deposits can thus be halted. There are several treatment options available to the clinicians, while the efficacy of some of these modalities has not yet been established.

Balkan endemic nephropathy and associated urothelial cancer: current status and future research

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OP

Balkan endemic nephropathy (BEN) is a chronic tubulointerstitial kidney disease encountered in high rate among the population of settlements along the tributaries of the Danube River in Serbia, Bosnia, Croatia, Bulgaria and Rumania. We would like to give a survey of the recent studies and a prospect for future research. Major emphasis will be given to the etiology of BEN and associated urothelial cancer.

Genetic polymorphisms in environmentally regulated genes (such as those involved in the distribution, metabolism, and disposal of toxic compounds, and DNA repair pathways and their regulators) may also account for differential susceptibility to BEN in the endemic region population and particularly to upper urinary tract oncogenesis. Indeed, CYP2D6 allele distribution differed in the group of BEN patients from that of healthy individuals and might be used as a possible marker for the BN susceptibility. Both cytochrome P450 and N-acetyl-transferases (NATs) activate many procarcinogens and chemicals whereas the multidrug resistance gene (MDR) codes for P-glycoprotein and is associated with xenobiotic resistance. A study of polymorphisms in CYP3A4, CYP3A5, NAT1, NAT2 and MDR genes in Bulgarian BEN patients and controls suggested that NAT2 and MDR variants are part of the genetic background of BEN. Genetic variants in xenobiotic metabolizing enzymes and transporters might thus augment the susceptibility of BEN patients to exogenous factors.

There are three actual theories attempting to explain the environmental cause of this disease: 1) the aristolochic acid hypothesis, which considers that the disease is produced by chronic intoxication with Aristolochia; 2) the mycotoxin hypothesis, which considers that BEN is produced by ochratoxin A, and 3) the Pliocene lignite hypothesis, which proposes that the disease is caused by long-term exposure to polycyclic aromatic hydrocarbons and other toxic organic compounds leaching into the well drinking water from low rank coals in vicinity to the endemic settlements. DNA adducts can be considered both as markers of the biologically effective dose and as markers of cancer risk. AA-DNA adducts may trigger the carcinogenic process in AAN patients. Indeed, the dA-AAI adduct is a premutagenic lesion and is associated with mutations in genes involved in carcinogenesis, such as the H-*ras* protooncogene and the p53 gene.

BEN is still a major health problem in some endemic regions, Kolubara River in Serbia and Bijeljina Region in Bosnia, where up to 70 per cent of patients on dialysis are with BEN, and the incidence of BEN is very high. In the absence of an identified etiological factor, effective prevention of BEN is not yet possible. Treatment of BEN is similar to that of all chronic interstitial nephropathies. Haemo- and peritoneal dialysis as well as kidney transplantation have been used with success. BEN does not recur after renal transplantation. With longer survival on renal replacement therapy, patients develop tumors of the renal pelvis or urether which should continuously be searched for.

Research on BEN is hampered by the lack of pathognomonic clinical and pathological characteristics. There is at present no specific biologic marker of the disease. Epidemiologic studies point to the causal role of still to be identified environmental factors although genetic, predisposing abnormalities are not fully elucidated. Genetic

expression analysis can identify candidate nephropathy pathogenesis genes and gene networks, which eventually could play role in BEN development. Thus, gene expression profiling using microarrays is a reliable method for investigation of renal function and nephrotoxicity. Moreover, the investigation of gene-gene and gene-environment interactions could be content on further studies to determining the precise risk for BEN.

Parameters of oxidative stress in patients with glomerulonephritis

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OP

Glomerulonephritis is an inflammatory disease characterized with morphological and functional changes in kidney followed by proteinuria, haematuria, azothemia, oliguria, edema and hypertension. Increased oxidative stress is one of the most important pathogenic mechanisms involved in development of glomerulopathies. The aim of the present study was to estimate the concentration of lipid peroxidation products (TBARS-thiobarbituric acid reactive substances) and antioxidant defence parameter - SH groups in urine and sera of patients with different forms of glomerulonephritis. A total number of 42 patients hospitalized at the Institute of Nephrology and Haemodyalisis, Clinical Centre Niš were examined. All patients were divided into four groups according to the disease type. The first group consisted of 8 patients with membranous glomerulonephritis (MN). In the second group were 12 patients with IgA nephropathy. The third group contained 10 patients with systemic lupus erythemathodes (SLE) followed by glomerulopathy, while the forth group were healthy persons (control). Obtained results indicate that the level of TBARS was significantly decreased in serum (micromol/l) and urine (micromol/g Cr) of patients with MN, while the SH group level (micromol/l) was significantly increased compared to the control group. Linear correlation between TBARS as well as SH groups and creatinine clearance was established (table 1).

Group	n	TBARS(urin);	TBARS(ser.);	SH(serum);
I (>78ml/min)	**12**	**0.582+0.151a,b;**	**11.24+1.94c,d;**	**257.57+47.85e,b;**
II (48-78ml/min)	**10**	**1.487+0.984;**	**15.38+4,06;**	**189.40+34.40;**
III (<48ml/min)	**8**	**1.42+0.70;**	**14.92+3.34;**	**200.67+35.94;**

a-p<0.001 vs. II gr, b-p<0,01 vs. III gr, c-p<0.05 vs. II gr, d-p<0,005 vs. III gr, e-p<0.005 vs. II gr.

The oxidant-antioxidant imbalance may contribute in the development of pathogenic changes in different types of glomerulonephritis. Antioxidative therapy could contribute to improvement of the disease and its complications.

T Cells as Mediators in Renal Ischemia/Reperfusion Injury

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OP

Inflammation has been established to contribute substantially to the pathogenesis of ischemia/reperfusion (I/R) with a central role for particular cells, adhesion molecules, and cytokines. Until recently, most of the research trying to unravel the pathogenesis of I/R injury has been focused on the role of neutrophils. However, recent studies have brought evidence that T cells and macrophages are also important leukocyte mediators of renal and extrarenal (liver) I/R injury. In vivo depletion of $CD4^+$ cells but not $CD8^+$ cells in wild-type mice was protective in I/R of the kidney. A marked preservation of liver function was also found after I/R in T-cell deficient athymic mice. Blocking the B7/CD28 costimulatory pathway by CTLA-4 Ig (recombinant fusion protein) ameliorated renal dysfunction and decreased mononuclear cell infiltration in I/R of the kidney. B7-1 expression was found limited to the membrane of the endothelial cells of the ascending vasa recta, resulting in trapping of CD28-expressing CD4 T cells. This trapping of leukocytes results in the upstream congestion in the ascending arterial vasa recta, generating the since more than 150 years described medullary vascular congestion of the kidney soon after ischemic injury. Recently, it has been shown that the T cell receptor could be involved in this interaction. Furthermore, in a model in mice it appeared that T cells modulate the effect of neutrophils in I/R. It seems worthwhile to study a combination therapy using anti-inflammatory/anti-adhesion molecules in the early phase of I/R.

Serum levels of TNFa and IL-6 versus urinary excretion of N-acethyl-b-glucosaminidase and a1-microglobuline in patients with acute renal failure

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OP

We have analyzed 25 patients (16 males and 9 females; mean age: 46.6± 19.6 years) with favorable outcome of acute renal failure (ARF:15 patients dialysis dependent /DDP/ and 10 patient dialysis independent /DIP/) from different origin in relation with the urinary excretion of N-

acetyl-b-glucosaminidase (NAG) and a1-microglobuline (a1MG), versus serum concentration of IL-6 (as a "far acting" cytokine) and TNFa.-in the first ten days of hospitalization in nephrology intensive care unit. In the following table we present the results of our investigations: NAG (mU/mmol Cr) IL-6(pg/l) a1MG(mg/l) TNFa(pg/l) Days:2-5 3.8+2.0 48.0+8.7 Days:4-7 137.4+12.4 108.8+17.5 Days:1-10 2.1+1.7 33.+22.9 88.7+45.1 69.9+45.1 Correlation (R) RNAG/ IL-6 = 0.81 Ra1MG/TNFa = 0.87 We have concluded that the urinary NAG and serum concentration of IL-6 present maximal values and very strong positive correlation between 2nd and 5th days of polyuric phase of ARF (8 DIP). Inversely, the urinary excretion of a1MG and blood presence of TNFa have demonstrated the highest positive correlation and maximal values a little bit later, namely between the 4th and 7th days (11 DDP). An obvious overlap was present on days 4 and 5 of polyuric phase estimating the all investigated parameters (two DIP and four DDP). The urinary detection of NAG and aMG may be a useful and cheaper parameter in differentiation of dialysis requesting from dialysis non-requesting ARF in the recovery phase of the syndrome.

Outcome of ANCA associated crescent glomerulonephritis (GN) in patients treated with pulses cyclophosphamide and oral prednisone

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OP

In this study we have described clinical features, performed outcome analysis and attempted to determine prognostic markers in a large homogenous cohort of ANCA-associated vasculitis treated with i.v. cyclophosphamide and i.v. metil-prednisolone + oral corticosteroids for induction and remission. All patients had renal failure and biopsy-proven crescentic glomerulonephritis (CGN). Attention was especially focused on patient and renal survival according to ANCA antigen specificity. Methods: In this retrospective analysis, 45 patients (62% males, mean age = 53.0 years) with a new diagnosis of rapidly progressive (GN) and biopsy-proven CGN were followed over a median of 36.2 months (range: 1-78). All patients received induction with i.v. metil-prednisolone and chronic treatment with monthly pulses of i.v. cyclophosphamide and oral corticosteroids. Results: 17 patients were PR3-ANCA positive, 24 MPO-ANCA positive, while 4 had both ANCA types. At presentation, mean S-creatinine was 7.2+/-3.9 mg/dL (56% cases with Cr. > 6 mg/dL), mean proteinuria was 1.7+/-1.9 g/day, 16% had oliguria and 38% macroscopic haematuria. 35.6% patients required dialysis initially and 9% plasmapheresis. At the end of follow-up, 22.2% were dialysis dependent. Renal and patient survivals were similar in patients with PR3-ANCA compared with MPO-ANCA positive patients. Predictors for ESRD development were a Cr > 6 mg/dL at presentation and initial dialysis requirement. Seven patients (15.6%) died mainly due to massive hemoptysis and respiratory failure. The only predictor for patient mortality was older age. Conclusion: According to our data, organ involvement and the development of ESRD, as well as mortality appear not to be influenced by ANCA antigen specificity. Our data is contradictory to previous data describing a more aggressive clinical presentation and a poorer outcome associated to the presence of PR3-ANCA in patients with crescentic glomerulonephritis due to ANCA small vessel vasculitis.

Relation of age and body size with the pulse pressure and nocturnal fall of blood pressure in elderly women

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OP

To analyze the relation of the body expressed as body height, weight and body mass index (BMI) with the pulse pressure (PP) and nocturnal fall of blood pressure (BP) in elderly women with well controlled hypertension. Material and Method: 24-hour ambulatory BP monitoring was performed and systolic and diastolic night/day ratio (%) as well as BMI were calculated in 114 women divided in three groups: 40-49 yrs (gr.1, n=29), 50-59 (gr.2, n=39) and =>60 yrs. (gr.3, n=46). All patients had essential hypertension under good control with antihypertensive drugs. Results: The group differed in body height (160.6 vs. 158.7 vs. 156.0 cm, F= 4.72, p=0.01). There were no significant differences in the body weight, BMI and the systolic blood pressure (SBP) between the groups, while the diastolic blood pressure (DBP) decreases, and the pulse pressure (PP) and night/day DBP ratio (%) increase with aging. For the whole group of 114, body height inversely correlated with the systolic blood pressure (SBP) and the PP. In women aged 40-49 years it was found that the higher the BMI the wider the pulse pressure (PP-24h: r=0.40, p=0.03, PP-daytime: r =0.44, p=0.02 and PP-night-time: r=0.35, p=0.06). In gr. 2, the DBP during day was lower with advancing age, suggesting that during this decade of life the mechanisms responsible for the widening of the pulse pressure occur

(Age vs. DBP during the day r = - 0.35, p=0.04). No correlation was found between the BP and the PP with the size of the body (i.e. body height, weight and BMI). In gr. 3, the body weight and the body height inversely correlated with the examined parameters: body height correlated with the SBP (SBP-24H: r=-0. 0.048 and SBP-night-time: r=-0.030 p=0.04) and with the pulse pressure (PP24h: r=-0.31 and PP-night-time: r= -0.035, p=0.02), while body weight correlated with both SBP and DBP during night (r=-0.38, p=0.008, and r=-0.47, p=0.002) and consequently with the percent of the nocturnal fall of BP: N/D-SBP: r=-0.29, p=0.05 and N/D-DBP: r=-0.32, p=0.03). In gr. 1, 13/29 (44.8%) women showed less than 10% nocturnal fall of the SBP, 22/39 (56.4%) in gr. 2 and 31/46 (67.4 %) in gr. 3. In this group there were no patients with night time SBP below 70% of the day time value. Inversion of the diurnal rhythm of SBP was demonstrated by only one patient (3.4%) in gr.1, in 4 (10.3%) in gr. 2 and in gr.3 there were 6/46 or 13.1 %. Only 3/29 (10.3%) women in gr. 1 had smaller than 10% nocturnal fall of DBP in comparison to the day-time value, and only 1/29 (3.4%) had inversion of the diurnal rhythm, which is in contrast to gr. 2: 12/39 (30.8%) and 2/39 (5.1%) and gr. 3: 10/46 (21.7%) and 5/46 (10.8%). Conclusions: Body height was inversely correlated with the widening of the PP, and body weight with the smaller nocturnal fall of BP in elderly women with well controlled hypertension. It could be concluded that the shorter and thinner women, the wider PP and the smaller nocturnal fall of BP. It is well established that the smaller nocturnal fall of BP and the widening of the PP are associated with higher cardiovascular morbidity/mortality. It could be suggested that control of the body weight in women with shorter body stature could have effect not only on blood pressure regulation, but also on the mechanisms involved in the age related changes of the diurnal rhythm of BP and on widening of PP.

Calcium and magnesium urinaryexcretion as predictors of pre-eclampsia

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OP

Objective: to investigate the potential usefulness of serum levels of calcium (SCa) and magnesium (SMg) and their urinary excretion as well as urinary metabolite of prostacycline, 6-KetoPGF1a (PGF1a), tromboxan B2 (TxB2), urinary metabolite of tromboxan A2 and parathyroid hormone (PTH) as predictors of preeclampsia. Design and Methods: Four hundred and eighty gravidas in five groups: 1-(NT)- normotensive gravidas, 2-(HHTA)-gravidas with chronic hypertension, 3-(SPE)-gravidas with superimposed preeclampsia, 4-(PE)-gravidas with preeclampsia and 5-gravidas with transient hypertension were observed at 8-13th, l8th, 23rd, 28th, 32nd and 36th gestational week (g.w.). Urinary excretion of calcium (Ca/L, Ca/dU), magnesium (Mg/L, Mg/dU), and serum levels of calcium, magnesium, were determined by standard laboratory tests. PGF1a, TxB2, and aldosterone were measured in 24-hour urine samples and PTH in serum using RIA method. Results: Mg/dU$\leq$3.3mmol/L at 8-13th g.w. showed high sensitivity and specificity (Sen=71%, Spec=67%) in predicting PE, also CaS$\leq$2.2mmol/L (Sen=67%, Spec=61%), Mg/L$\leq$2.8mmol/L (Sen=67%, Spec=55%), PTH$\leq$13.5 pg/ml (Sen=67%, Spec=52%) and Ald$\leq$12 mg/ml (Sen=56%, Spec=58%) at l8th g.w. The best predictive values for SPE were: Mg/L$\leq$2.9mmol/L (Sen=75%, Spec=75%), Ca/L$\leq$4.4mmol/L (Sen=71%, Spec=57%) and Ald$\leq$15.5 mg/ml (Sen=63%, Spec=60%) at 8-13th g.w.; also Mg/L$\leq$2.5mmol/L (Sen=70%, Spec=75%), Ca/L$\leq$4.2mmol/L (Sen=70%, Spec=62%) and PTH$\leq$12 pg/ml (Sen=67%, Spec=54%) at l8th g.w. Conclusions: We have confirmed marked reduction in magnesium excretion that is probably result of total magnesium deficiency, which is recently shown as important factor for development of hypertension and insulin resistance. We have found inadequate low PTH secretion in PE and SPE in hypocalcemic condition of pregnancy that could be a result of total magnesium deficiency and a factor for persisting hypocalcaemia.

Progression of kidney damage in Balkan endemic nephropathy: a 15-year follow-up of patients with kidney biopsy examination

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OP

Progression of kidney damage was studied in 18 patients with Balkan endemic nephropathy (BEN), with a mean 15-year follow-up after renal biopsy. According to kidney function, estimated by ^{99m}Tc-DTPA clearance, patients were divided into three groups: with apparently normal kidney function (clearance 103.5±21.3 ml/min/1.73 m^2), with incipient renal failure (clearance 65.5±11.3), and with advanced renal failure (clearance 28.0±6.2). The mean yearly decrease of GFR was 2.74 ml/min. In two patients an increase of kidney function was recorded. Six patients become dialysis dependent, two from the group with incipient renal failure, but all four from the group with

advanced renal failure. Three patients died after 8 to 12 years of follow-up, one from causes unrelated to kidney disease, and two in end-stage renal failure.
This study has shown that BEN is characterized by a slow course and prolonged evolution, modified by medical supervision and treatment.

Prevention in nephrology: the issue of today and the challenge for the future

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OP

The number of patients with chronic kidney disease (CKD) is increasing worldwide and end stage renal disease (ESRD) is nowadays perceived as a major health problem resulting in considerable increase of morbidity and mortality. It has been estimated that CKD population is 20-times larger than the number of new patients reaching ESRD each year. This has also placed increasing demands on health care resources due to the heavy costs from renal replacement therapies. The core idea of todays preventive strategies is identification of the factors that determine renal risk and subsequent intervention aim at prevention of progressive renal function loss. While the number of subjects with ESRD related to renal diseases is decreasing, the bulk of individuals at risk is composed by patients with hypertension, diabetes type 2, hyperlipidemia and atherosclerosis. Given their high frequency, it can be estimated that high proportion from the general population are at risk for CKD. The challenge is how to detect these subjects in an early phase when renoprotective therapy can still be instituted. Next to the blood pressure (BP), albuminuria and renal function by serum creatinine may be the best, simple and inexpensive predictors for renal risk at all stages from the normal population to the late diabetic state. Microalbuminuria (MA) is a well-recognized marker of cardiovascular (CV) risk and of risk of decrease of GFR in diabetics as well as in the general population. Population at risk for CKD should be screened for MA at least annually. The PREVEND study showed that MA can be detected in a substantial part of the population and in the future, it may become standard to test general population. A high-normal albuminuria was associated with glomerular hyperfiltration as in type 1 diabetes and more pronounced elevation was associated with an impaired GFR. PREVEND, LIFE, RENAAL trials showed that lowering proteinuria with ACE inhibitors and Ang II receptor blockers (ARBs) is associated with renal protection. Increasing body of evidence also suggests a possible role of statins in reducing proteinuria and slowing down the progression of CKD. Clinical trials have demonstrated the beneficial effects of controlling BP in primary and secondary prevention of renal disease progression. RENAAL was the first study to report that a specific treatment significantly reduces ESRD in Type 2 diabetic. RENAAL and ISNT showed that the use of ARBs in type 2 diabetics results in delay in the progression. Further reduction can be attained by combination of ACEIs and ARBs. These drugs add to protection beyond BP and blood glucose control (HOPE, LIFE, CHARM). Patients with CKD run a great risk also of CV morbidity and mortality. The risk of death is high: 20% die within 5 years, mostly because of CV complications. IRMA 2, IDNT and RENAAL trials have shown that if one targets kidney with renoprotective antihypertensive therapies, one may also protect heart. In order to avoid the devastating health and economic effects of CKD, worldwide action is clearly needed to develop and implement screening strategies and wide scale preventive programs that are of great interest today and will certainly be the challenge for the future.

Inflammatory cytokines and malnutrition as related to risk for coronary heart disease in hemodialysis patients

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OP

Malnutrition and inflammation are associated with end-stage renal disease (ESRD). Interleukin (IL)-6 and tumor necrosis factor-alfa (TNF-α) powerfully predict death from cardiovascular disease in dialysis patients as well as progression of vascular injury. Aim of our study was to establish association between markers of inflammation and parameters of malnutrition in hemodialysis patients.The study population consisted of 42 hemodialysis patients with different parameters of malnutrition and mean age 55±8 with dialysis duration 6,25±2. Patients were divided according to tertiles of lean body mass(LBM) was assessed by bioelectrical impedance(BIA) and with the following intertertiles ranges: 1st tertile (LBM-37kg), 2nd (LBM 38-50kg) and 3rd (LBM ≥51kg).For nutritional assessment simple parameters were used: triceps skinfold (TSF), midarm muscle circumference (MAMC), body mass index (BMI), and serum albumin concentration as representative of body fat, muscle protein and visceral protein respectively. Blood samples were taken after an overnight fast and plasma lipid profiles were measured: total cholesterol, LDL cholesterol, high-density lipoprotein (HDL) cholesterol, and tryglicerides, using conventional enzymatic methods. Serum urea and creatinine levels were

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also measured by the routine procedures of our laboratory. Inflammatory cytokines, IL-6 and TNF-α, was measured by photometric enzyme-linked immunosorbent assay (ELISA).We used standard Doppler echo examinations to determine of left ventricular mass index (LVMI).The patients of the 3rd tertile, representing 30% of the whole group, presented LBM levels indicative of an well nourished group. These patients presented BMI and other nutritional parameters, significantly higher than that of the patients in the 1st tertile.IL-6 and TNF-α were lower than that found in the patients in the 1st tertile and these differences were significantly.Patients with a lower LBM values had decreased BMI,TSF, MAMC, serum creatinine, serum albumin, serum cholesterol and dietary protein intake values than those in the higher tertile. Malnourished patients had significantly increased cardiovascular disease and carotid plaques. Significant positive relations between TNF-α and LDL/HDL cholesterol was found in the groups ($p< 0.05$) and positive correlation between IL-6 and LVMI ($p<0.05$). In summary, this cross-sectional study in hemodialysis patients has demonstrated high prevalence of malnutrition, inflammation, carotid plaques and cardiovascular disease. Malnourished dialysis patients are more often with cardiovaslcular disease and carotid plaques and have elevated inflammatory cytokines which all may increase the risk of atherosclerotic vascular disease.

Comparison between groups:

	1st tertile	3rd tertile	p
BMIkg/m²	22±3.4	24±1.97	0.04
MAMCcm	23.9±4.7	25.7±3.1	0.04
Albuming/L	31±3.01	33±3.21	0.05
Transferin pg/ml	1.42±0.29	1.75±0.32	NS
TNF-α pg/ml	207.73±165	195.41±153	NS
IL-6 pg/ml	450.14±419	341.27±339	0.03

Renal resistive index: is it a predictor of renal vascular and target or gan damage in essential hypertension?

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OP

Increased RRI is associated with early signs of target organ damage in essential hypertension and could be a marker of intrarenal vascular damage (atherosclerosis). The present study was carried out to investigate whether the RRI, obtained by color duplex Doppler sonography, is useful for the evaluation of renal atherosclerosis in essential hypertensive patients. In order to evaluate the importance of RRI as a predictor of renal vascular and end-organ hypertensive damage in case of mild to moderate essential hypertension, 40 patients divided in two groups were examined: group 1, 22 men (mean age 43±7.72), and group 2,18 women (mean age 49±8.91). All patients underwent complete physical examination and routine biochemical analyses of blood. We also studied the relationship between RRI and other markers of renal function in patients with mild to moderate essential hypertension as well as to evaluate the percents and the extent of the other kinds of hypertensive target organ damage (fundoscopic and electrocardiograms changes). Body mass index (BMI) kg/m2 and clearence of creatinine were calculated by formula (Cocrofcolf). Using color duplex Doppler sonography RRI was calculated of both kidney and mean value was taken for analysis. Electrocardiograms and fundoscopy changes were evaluated by conventional codex. All the patients examined were overweight: BMI=28.32+3.09 for man and 33.55+5.4 for women. There was no difference of blood pressure and RRI between the groups. In 16 out of 40 patients (40%) increases of RRI (>064) was found and in all of these patients (100%) signs of hypertensive damage on fundoscopy was present. 53.7% of patients with increased RRI have electrocardiograms hypertensive changes. RRI showed significant correlation with mean arterial pressure (MAP), $p<0.019$, using x2-Fisher exact test), but not with other investigated parameters. Significant correlation of SBP with age, serum uric acid, cholesterol and electrocardiograms changes was found, but not with RRI. This fact in our study could be explained with relatively small number of examined patients and probably with severity and duration of hypertension. However, RRI could be a marker for target organ damage and predictor of progression of renal damage in patients with moderate to severe hypertension.

ANCA-GMB dot-blot assay - useful screening assay in diagnosis of patients with glomerulonephritis

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OP

An assay, which obtained results in an easy way in immunological not completely equipped laboratory, is always necessary. Patients with anti-neutrophil cytoplasmic antibody (ANCA) small-vessel vasculitis may develop necrotizing crescentic glomerulonephritis and chronic renal failure. The early serologic detection of auto-antibodies associated with ANCA and anti-glomerular basement membrane (GBM) diseases will be helpful in preventing

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end-stage renal disease. A quick diagnosis is fundamental before the kidney undergo important damage. We performed the combined ANCA-GBM dot-blot strip assay (Biomedical Diagnostics, Brugge, Belgium) in 30 consecutive patients with biopsy proven glomerulonephritis (GN). PR3- and MPO-ANCA were detected in 2 and 5 samples, respectively. Three samples were positive for both PR3- and MPO-ANCA (all 3 had focal segmental necrotizing GN). One patient was diagnosed as having Goodpastures's syndrome (the only GBM positive result) and two had Wegener's granulomatosis (the two PR3-ANCA positive results). Two additional samples were equivocal positive for PR3-ANCA and MPO-ANCA, respectively. Patients positive only for MPO-ANCA had only limited extrarenal organ manifestations. Anti-PR3 positive patients with necrotizing glomerulonephritis had a more dramatic deterioration of their renal function at diagnosis and they both continued on dialysis. Radiographically, these patients had nodular or pneumonia-like lesions. Only the one GBM positive patient developed acute respiratory failure. In conclusion, the ANCA-GBM dot-blot is a useful screening assay in laboratories were conventional ANCA testing is not readily available.

Haemorragic fever with renal syndrome (HFRS) in last five years in Kosova

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PP

Haemorragic fever with renal syndrome (HFRS) is an acute disease caused by viruses of Hantavirus family Bunyavirade. It is characterized with fever, haemorragic syndrome and nephropathy. The severe forms of the diseases appeared in the past in many countries of the world like China, Korea, ex Soviet Union and Eastern Europe.

Since 1952 when the first case was identified in Bosnia and Herzegovina (ex Yugoslavia) there have been noted more 1000 cases of HFRS.

The first case of HFRS in Kosova appeared in 1986. During the first five years after the war in Kosova 18 cases with HFRS were treated. This number represents 10% of the cases with acute renal disease /ARD/. Most of the cases were male (15) and their mean age was 48+-12.

ARD appeared in the early phase of the disease, commonly accompanied with haemorragic syndrome. Patients consulted the clinic 3-5 days after the disease was manifested. Diuresis was not changed in 15% of the patients and the oliguric phase in the others lasted for about 12 days.

Disorders of the other systems and organs were noted in 90% of the patients. Generalized intravascular coagulation was present in 16 patients, cardiovascular shock in 14 patients, central nervous system disorders 10 patients, hepatic insufficiency 8 patients, etc.

All patients were treated with hemodialysis, most of them with daily haemodialysis. The average number of dialysis sessions was 11. Besides haemodialysis, we performed symptomatic and supportive therapy. The creatinine clearance of the patients after 10 days treatment with haemodialysis was 85ml/min.

3 of the patients died because of complications of the central nervous system.

In conclusion we can say that HFRS in Kosova was very frequent in the first two years after the war, 10 cases. The treatment of acute renal insufficiency with daily hemodialysis and symptomatic therapy was successful, excluding the cases with central nervous system complications.

The use of filters for leucocyte depletion in anemic patients on maintenance hemodialysis

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PP

Renal anemia is one of the major chronic complications in end stage renal disease. It is caused by reduced production of erythropoietin (EPO) due to uremic toxin effects, reduced half-life of RBC, iron deficiency, aluminum intoxication, blood loss during hemodialysis, gastrointestinal hemorrhage, epistaxis, infections etc. Allogenic blood transfusion is transplantation of certain or all cell types. However, allogenic blood transfusion can contribute to many immune system disturbances with clinical side effects. Besides erythrocytes, mononuclear, T and B-lymphocytes are also transfused, which cause immunomodulatory disturbances in the immune system of a recipient. Leukocytes are responsible for frequent febrile non-hemolytic transfusion reactions, alloimmunization toward leukocytes and HLA antigen and transmission of CMV. Anti-Le antibodies, forming of immune-complexes, complement activation with pirogenic C3a and C5a immunoinflammatory citokines cause febrile reactions. Commercial use of filters for leukocyte depletion with removal of leukocytes and degraded products of microaggregates and cytokines, cause minimum harmful immunomodulatory effects and prevent transmission of CMV.

The aim of the study was to present the effects of transfusion of erythrocytes with residual number of leukocytes in anemic patients on chronic hemodialysis at the Institute of Nephrology in Struga.

During 1997-2004 all anemic patients on hemodialysis were divided in 4 groups. The first group of 34 pts had febrile non-hemolytic transfusion reaction. The second group (25

pts) was immunized toward leukocyte and HLA antigen. The third group consisted of 57 young candidates for kidney transplantation (for prevention of HLA immunization). The fourth group with 16 pts with SLE (for immune-complexes and autoantibodies). A total of 132 patients (65 males and 67 females) received 319 units of RBC with residual number of leukocytes. Commercial filters of BAXTERÔ (Lekostop 4 LDS) and TERUMOÔ (IMUGARD III RC) of the second and third generation with microaggregate filter and synthetic polyurethane fibers, with 20-40 microns pores that remove leukocytes, platelets, microaggregates and fibrin were used. Erythrocyte concentrates are filtered until 5 days of collection. RESULTS: AABB permits maximum < 5x106 WBCs/unit for prevention of febrile non-hemolytic reaction. The filters we used reach residual leukocyte number of 2-x 105- the Le reduction of 99- 99,99 %. The number of RBC after filtration is minimum 90% - 40 gr Hb per unit. In none of the patients who received the leuko-filtered blood, adverse post-transfusion reactions were noticed. CONCLUSION: The used filters for leukocyte depletion are characterized with superior biocompatibility, excellent elimination of all types of leukocytes and high "recovery" of erythrocytes. The use of filters for Le depletion reduces and minimizes the side effects of allogenic blood transfusion in patients on chronic hemodialysis who are alloimmunized, in patients with SLE, and particularly in young patients - candidates for kidney transplantation.

Membranoproliferative glomerulonephritis type I complicating diabetic nephropathy

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PP

Renal diseases other than diabetic nephropathy (DN) can be found in diabetic patients who underwent renal biopsy, but membranoproliferative glomerulonephritis type I (MPGN I) is rare. Analyzing data at our Department for the past 3 years, we noted 18 patients with primary MPGN I and 4 associated with DN. All patients were male, aged 47+/-8,1 years and all were on insulin treatment more than 3 years. All of them were nephrotic (proteinuria 7,53+/-2,02g/d) and only one was with normal renal function (serum creatinine 186,25+/-43,46 micromol/l). Nodular glomerulosclerosis with diffuse membranoproliferative GN was registered in two patients and diffuse form of diabetic nephropathy with a combination of segmental and diffuse changes for membranoproliferative GN in the other two patients. Analyzing what can be common for these two distinct disorders we can note that: 1) Hyperperfusion injury is common for both diseases (DN and MPGN I); the highest incidence among glomerular diseases was found in patients with MPGN and 2) Renal structure and function in both diseases is also similar - thickening of extracellular membranes and mesangial matrix followed by heavy proteinuria.

Prednisone/cyclophosphamide treatment in adult-onset autosomal dominant familial focal segmental glomerulosclerosis (FSGS 1)

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PP

Familial FSGS is a heterogeneous disease characterized by proteinuria and an unremitting deterioration of the excretory function. FSGS is a less severe form of familial FSGS with autosomal-dominant inheritance, adult onset and slow progression to end-stage renal failure. Previous studies showed steroid unresponsiveness or variable response to steroids, cyclophosphamide and ACE inhibitors, and low-rate of recurrence after transplantation. We treated with steroids/cyclophosphamide 8 patients (3 families) with FSGS 1 (aged 24+/-3,11) and compared the results to 20 patients with idiopathic FSGS(aged 35+/-2) and 6 untreated patients with familial form. The treatment included prednisone 0,5mg/kg/daily for 4 months with slow tapping over to 20 mg daily for further 6 months and cyclophosphamide 50mg daily 6 months, alternate use after. The follow-up period was 2 years. None of the patients with idiopathic FSGS experienced end-stage renal failure during follow up (serum creatinine 115+/-10, to 183,4+/-65) and proteinuria decreased (5,42+/-0,84 to 4,68+/-1,2g/d). One FSGS 1 patient died (CVI), 2/8 started dialysis after 2 years, but 5/8 patients presented similar results as control group: creatinine 130,62+/-15,91 to 215,78+/-63,62 and proteinuria 4,69+/-0,81 to 3,28; 24g/d. All untreated patients with FSGS 1 experienced end-stage renal failure within 2 years. Conclusion: both forms of adult-onset FSGS, idiopathic and familial presented slow deterioration of the renal function under immunosuppression, but we can not say that they are good responders: complete or partial remission was not noted.

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Erythropoietin response in hemodialysis patients: the role of acute - phase proteins

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PP

The aim of the study was to evaluate the role of acute-phase proteins on rHu-EPO response in haemodialysis patients. Twenty patients with poor response - Hb<10 g/L (group A) have been compared to 25 patients with good response - Hb>12 g/l (group B) under the same conditions. Patients from both groups received the same EPO-beta subcutaneously for three months prior to investigation: 260 + 138 U/kg/week (group A) and 65 + 28 U/kg/week (group B). The following parameters were analyzed: age, RDT and KT/V. Laboratory findings in serum include acute-phase proteins - CRP, fibrinogen, albumin, transfferin, iron indices - ferritin, TSAT, PTH. The significantly increased levels of positive acute phase proteins (CRP, fibrinogen) and decreased levels of negative acute phase proteins (albumin, transfferin) in the group of poor responders were noticed. Acute-phase proteins as inflammation markers are very strong predictors of rHuEPO hypo responsiveness and should be included in routine analyses during rHuEPO treatment in hemodialysis patients. Poor responders, Good responders, Significance, Age (years) 50,7 + 13,5 *vs.* 44,23 + 12,8 n.s.; Duration of HD (months) 52,35 + 51,8 *vs.* 72,8 + 42,8 n.s.; KT/V 1,16 + 0,32 *vs.* 1,42 + 0,28 n.s.; Ferritin (ng/ml) 156,9 + 159,8 *vs.* 324,9 + 208,8 (p=0,14); TSAT (%) 20,38 + 14,23 *vs.* 28,26 + 18,16 (p=0,16); PTH (pg/ml) 255 + 215 *vs.* 210 + 185 (p=0,14); CRP (mg/L) 20,1 + 13,8 *vs.* 4,5 + 3,1 (p<0.001); Fibrinogen (g/L) 5,13 + 0,87 *vs.* 3,31 + 1,55 (p<0.001); Albumin (g/L) 36,4 + 4,6 *vs.* 40,69 + 2,87 (p<0.01) Transfferin (mg/dL) 91,9 + 22,4 *vs.* 143,5 + 32,6 (p<0.001).

Congestive heart failure and renal dysfunction

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PP

The kidney plays a key role in the homeostatic maintenance of fluids and electrolytes in the context of chronic congestive heart failure (CHF). CHF carries a spectrum of pathophysiological aberrations, which constitute a stress on the respective renal regulatory mechanisms. We defined bedside clinical, laboratory and electrocardiographic parameters characterizing CHF patients with and without concomitant renal failure (RF), and analyzed their impact on mortality. We studied 146 symptomatic unselected consecutive furosemide-treated CHF patients hospitalized for various acute conditions. On admission, history taking, physical examination, chest x-ray, ECG and routine laboratory tests were performed. Subsequently, patients were divided into 2 subgroups, those with serum creatinine > 140 mmol/l (58) and those with lower values (88). Prevailing in RF subgroup were older age, male gender, admission pulmonary edema, cardiac arrhythmias, cardiac condition disturbances, lower ejection fraction, anemia, higher furosemide maintenance dosages, insulin treatment and receiving less ACE inhibitors. RF being the parameter most significantly associated with low survival. Using multivariate analysis in the RF subgroup, older age, female gender and diabetes mellitus proved most significantly associated with poorer survival. In the non-RF subgroup, only older age and diabetes mellitus were significantly associated with low survival. Renal failure is a marker of severity in CHF. Its full-blown deleterious prognostic effect is already manifested at serum creatinine 140 mmol/l. Older age, diabetes mellitus and female gender significantly heralded a shorter survival. Such patients require special care.

Primary hyperparathyroidism - renal form

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PP

Primary hyperparathyroidism has evolved from what was initially thought to be a very rare disease to a relatively frequent endocrine disorder. The incidence of hyperparathyroidism increases with age and is higher in postmenopausal women. Histologic examination shows a parathyroid adenoma in about 90% of patients. Roughly 7% of cases are due to hyperplasia of two or more glands. Parathyroid cancer occurs rarely in 3% of cases. Primary hyperparathyroidism is usually characterized by hypercalcemia, hypophosphatemia, and excessive bone resorption. Although asymptomatic hypercalcemia is the most frequent presentation, nephrolithiasis is also common, particularly when hypercalciuria is of long duration. It may be difficult to distinguish primary from secondary hyperparathyroidism in the presence of renal insufficiency. In hyperparathyroidism, treatment is surgical if the disease is symptomatic or progressive. Any adenomatous glands must be removed. When first-time parathyroid exploration is performed by experienced surgeon, cure rates of 90% are usual and routine preoperative localization of parathyroid tissue is unnecessary. If preoperative localization is mandatory, technetium 99 sestamibi scanning is more sensitive and specific than earlier radionuclide agents. Primary hyperparathyroidism is rarely diagnosed in our country and when found, it is in the late phase. Skeletal and renal forms of the disease are predominating. We examined 9 patients with renal classical form of primary hyperparathyroidism, eight women and one man, aged 42-77 years. They referred to the nephrologist with recurrent

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nephrolithiasis. All patients had hypercalcaemia, their plasma total calcium ranging from 2,5 to 3,39 mmol/l and had elevated levels of intact parathyroid hormone (iPTH), between 101 and 269 pg/ml. Seven patients need some further investigations before surgical treatment, and two of them are successfully operated. Both were operated for urological complications before hyperparathyroidism was diagnosed and successful nephrolithotomy was done. The diagnosis of an adenoma affecting a single parathyroid gland was confirmed by ultrasound examination in both and thallium/technetium subtraction scintigraphy in one patient. Parathyroid adenoma was successfully removed. After parathyroidectomy, microscopic examination of tissue samples revealed primary parathyroid adenoma. They had postoperative normalization of serum calcium levels without recurrent renal stones. Primary hyperparathyroidism is a common endocrine disease but often underdiagnosed. Taking into account that hyperparathyroidism represents approximately 7% of the causes of nephrolithiasis, we should search for hypercalcaemia and hyperparathyroidism in recurrent renal stone- forming patients.

Acid-base disorders in patients with hypoproteinemia

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PP

Hypoproteinemia is a common disturbance in patients suffering from various diseases. It can be accompanied by hypovolemia and hypotension it influences the volume space of drugs in the body as well as the acid-base balance. In the present study, 22 patients with hypoproteinemia (8F, 14M) constituted group A. In this group the acid-base disorders as well as their importance were evaluated. From group A, 10 patients suffered from nephrotic syndrome, while 17/22 from chronic renal failure (CRF). The level of serum proteins varied from 46 gr/L to 64 gr/L, while the levels of albumin ranged from 13 to 32 gr/L. Furthermore, 15 normal individuals were used as controls (group B) aging from 24 to 72 years old with normal levels of serum proteins. The results suggested that in group A, 21/22 patients had acid-base disorders. Moreover, 11/22 patients had a mixed disturbance (metabolic alkalosis combined with respiratory alkalosis). Only 4/22 patients had metabolic alkalosis, 4/22 had metabolic acidosis (mixed) and 2/22 respiratory alkalosis. In particular, the blood's pH appeared to be slightly alkaline. In group A the patients' anion gap ranged from 5,7 to 18,5 mmol/L. Based on this fact, group A patients were divided in two sub-groups. The first one (sub-group A1) consisted of 12 patients measuring an anion gap higher than 10 mmol/L, while the second group (sub-group A2) consisted of 10 patients with an anion gap lower than 10 mmol/L. The comparison of the pH between the two sub-groups suggested that A1 had respiratory alkalosis, while A2 had metabolic alkalosis. It can be concluded, that patients with hypoproteinemia appear to have disturbances of acid-base balance (mainly metabolic alkalosis), because of the reduction in serum proteins, which improves the pH levels in patients with CRF. The second most common acid-base disorder that appears in hypoproteinemic patients is respiratory alkalosis.

Liver and kidney damage in acute poisonings

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PP

Simultaneous damage of liver and kidney in acute poisonings occurs very often in the present time. The liver and kidney damage was presented in 60 patients after the carbon tetrachloride poisoning, in 81 after the mushroom poisoning (Amanita Phalloides) and in 20 patients after the ethylene glycol poisoning from the differential diagnosis, conservative and renal replacement therapy points of view. In all patients acute toxic hepatitis and in some patients also acute renal failure was present. After the acute carbon tetrachloride poisoning, the acute hepatitis developed simultaneously with acute renal failure. Death occurred in two patients in liver coma. In patients suffering from mushroom poisoning liver damage developed during the several hours or days and liver coma was the cause of death in 16 patients. Acute renal failure was less often and it was not a cause of death in patients with mushroom poisoning. In 20 patients after the ethylene glycol poisoning metabolic acidosis, leucocytosis, oxaluria and acute renal failure rapidly developed. Liver damage was less significant. Three patients died in severe metabolic acidosis before a period of our possibility to use bicarbonate haemodialysis. During the last 30 years the qualitative development of renal replacement therapy (peritoneal dialysis, bicarbonate haemodialysis, haemoperfusion through active charcoal and other sorbents, plasmapheresis, haemofiltration, albumin haemodialysis, etc.) was noted. The development of these methods was very important for the cure and improvement of the prognosis after various poisonings with the simultaneous liver and kidney damage.

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Bioimpedance analysis (BIA) in patient with chronic glomerulonephritis (GN)

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PP

The measurement of total body water (TBW) and its distribution in the body in extracellular and intracellular space give better information for optimal diuretic therapy. The aim of the study was to compare the data from the bioimpedance examinations in patients with GN. The study included 30 pts with types GN divided in 3 groups-A-12 pts with nephrotic syndrome and clinical manifested edema, B-3 pts with laboratory data for nephrotic syndrome without edema, C-15 pts without nephrotic syndrome and without oedema. The following parameters were examined: serum albumin (Salb), creatinine (Scr), cholesterol (Chol), triglycerides, blood pressure, body weight and height. The whole body bioimpedance was measured using tetrapolar method with apparatus MBI - 101 with frequencies 2kHz and 100kHz. Using high and low frequences gave possibility to measure TBW and its distribution in intra and extracellular space. A significant differences were established in Scr between the three groups. Chol was highest in the first group. TBW in group A was 82,17%, extracellular water (ECW) was 34,95% and intracellular water (ICW) was 47,21%; in B - TBW was 84,23%, ECW - 26,91%, ICW - 57,31%; in group C TBW was 73,39%, ECW - 39,38% and ICW 34,4%. Bioimpedance examination is safe, cheap and non invasive method that gives sufficient information for TBW and its distribution in the body especially in patients with glomerulonephritis and with nephrotic syndrome. It would help to make a right decision for further diuretic treatment in such patients.

The effect of anthropometric measurements on kidney functions

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PP

The negative effect of increased body mass index (BMI) on kidney has been known. But the relation between other anthropometric measurements and kidney functions has not been enough investigated. We studied the influence of anthropometric measurements on kidney functions.

Fourty-seven patients aged 49.2+8.1 (24-72), followed up between 2004 to 2005, were included in the study. Persons who had hypertension, type 2 diabetes mellitus, acute and chronic renal failure, infection and inflammation, thyroid dysfunction, secondary obesity, and pregnant were excluded. BMI, waist circumferences (WC) and waist to hip ratios (WHR) of all patients were recorded. We accepted as increased anthropometric measurements if BMI was >30 kg/m2; WC was >88cm in women, >102 cm in men; WHR was >0.85 in women, >0.90 in men. Both increased and normal groups were compared by serum levels of urea, creatinine, and albumin, 24hr urine creatinine clearance and urinary albumin excretion rate (UAER).

Twenty-nine (61.7%) of the cases were female, 18 (38.3%) of the cases were male. Of all patients, 22 (46.8%) had obesity (BMI>30 kg/m2), 20 (42.6%) had increased WC, 29 (61.7%) had increased WHR. Obese subjects had significantly higher levels of serum creatinine and UAER than the non-obese subjects (1.1-0.7 mg/dl; 21.6-10.2 mg/24h; $p<0.01$, respectively). While the prevalence of microalbuminuria in obese groups was 27.2%; non-obese group had no microalbuminuria. None of all subjects had macroalbuminuria. Subjects who had increased WC and WHR had significantly higher levels of serum albumin and UAER than the normal subjects ($p<0.05$, $p<0.01$, respectively). While there was low-intermediate correlation between UAER and serum creatinine level with WC and WHR, we found high correlation with BMI. The mean levels of serum creatinine in the cases with increased BMI, WC, WHR were high, but the differences were not statistically significant.

In conclusion, the increases of anthropometric measurements effect on kidney functions negatively. However, the influence of BMI on kidney is more prominent. For this reason; individuals with increased anthropometric measurements should be followed up closely in terms of renal functions additional to cardiovascular risk factors.

Acute renal failure and rhabdomyolysis resulting from drug and alcohol abuse

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PP

Rhabdomyolysis is a common cause of acute renal failure associated with drug abuse. The most frequently-recognized responsible substances are intravenous opiates and alcohol. In this study we present more patients with acute renal failure and non-traumatic rhabdomyolysis associated with substance abuse than has previously been described in a single report, suggesting that the incidence of rhabdomyolisis-related acute renal failure secondary to substance abuse has increased in our country. We identified a group of 30 patients who developed renal failure after recent intravenous opiates use. There was a significant rise in the incidence during 2000-2005 compared with the previous five years ($p<0.05$). Rhabdomyolysis was the likely cause of renal failure in all cases. Patients who

required dialysis had a higher admission creatine kinase (p>0.05), a higher admission creatinine >6mg/dl, (p<0.05), a higher peak creatinine kinase (p<0.05), a lower urine output in the initial 24 hours (p<0.05), and a longer length of hospitalisation (p<0.05). No patient died and all patients admitted with rhabdomyolysis-induced renal failure associated with opiate use in our hospital. With the continued increase in substance abuse in general and alcohol in particular, a continuing high number of cases of acute renal failure from non-traumatic rhabdomyolysis is to be expected. We found a varied approach to an increasing clinical problem and suggest investigative and therapeutic approach to be introduced. Although renal recovery can be expected, long-term disability may occur due to potential serious complications.

Microalbuminuria - the new marker for Balkan endemic nephropathy?

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PP

Balkan endemic nephropathy (BEN) is still unknown disease that is diagnosed on the basis of several criteria. One of them is increased urinary concentration of β-2 microglobulin, but detection of this protein is rather complicated and not suitable for a daily routine. Urinary albumin/creatinine ratio in a random urine sample is a good substitute for 24h urine collection - albuminuria assessment. It was determined in 8 non-proteinuric patients (all females, aged 58,37 +/- 4,37 years) from the town of Šamac region (Bosnia and Herzegovina) in order to establish it as a suitable BEN marker. Exclusion criteria were diabetes mellitus, hypertension and heart failure. Increased urinary albumin/creatinine ratio was found in 50% of BEN patients. Mean of all test results was 5,48 +/- 5,75. Extended study is in progress, but according to these preliminary results, microalbuminuria may be suggested as one of the diagnostic criteria for early BEN detection.

The effects of angiotensin-converting enzyme inhibitors and angiotensin receptor blockers on proteinuria and renoprotection

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PP

Previous studies have revealed that angiotensin-converting enzyme inhibitor (ACE-I) is an effective treatment for preventing chronic renal injuries. Recent studies have suggested that combination therapy with ACE-I and angiotensin receptor blocker (ARB) may be effective for preventing progression of chronic kidney diseases (CKD). This study was undertaken to evaluate whether this combination therapy provides an additive antiproteinuric effect and renoprotection in patients (pts) with CKD. 40 pts were included in this study (22 males and 18 females, with mean age 35.4+4.5 years, and mean duration of illness of 5.5+3.1 years). All patients had non-nephrotic proteinuria ranging from 0.5 to 2.5 g/d with normal renal function (ClCr>70 ml/min). ACE-I (enalapril: 5-10 mg/day) was given for more than 15 weeks before administration of ARB (valsartan: 40-80 mg/d). Combination therapy was maintained for more than 1.5 years. From combination therapy was achieved a significant reduction of proteinuria from the basal value of 0.84+0.3 to 0.3+0.40 g/d after 3 months that combination therapy was started (p<0.05). Systolic and diastolic blood pressures were remained unchanged (pre: 116+12/64.7+7.3 mmHg, after: 108+13/60.7+6.2 mmHg), and as well as creatinine clearance, hematocrit, and seric concentrations of protein and potassium were unchanged. These results show that combination therapy with ACE-I and ARB is beneficial and has both additive antiproteinuric effect and renoprotective effect for pts with CKD.

Efficacy of ketodiet in predialytic chronic renal failure

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PP

A low-protein diet with increased content of essential amino acids and their keto-analogues has been applied in patients with chronic renal failure (CRF). The aim of this study was to assess whether a ketodiet, a combination of ketoanalogues of essential amino acids, and a low-protein diet, retards progression of chronic renal failure and maintains nutritional status. Thirty-four patients in

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predialytic stages of CRF, randomized in terms of age, sex distribution, blood pressure control, etiology, serum creatinine, glomerular filtration rate (GFR), and body mass index (BMI) were included in the study. Subjects randomly received 0.5-0.6 g/kg/d protein plus tablets (4-6 tablets/day) of Ketosteril (Fresenius Kabi, Germany) for 12 months. Changes in GFR and nutritional parameters were measured. Mean (+SD) GFR measured by the Cockcroft-Gault formula was unchanged (28.1+8.8 before and 27.6+10.1 ml/min/1.73 m2 after the study, P=0.72). Serum creatinine before and after the study was 2.26+1.03 mg/dl and 2.07+0.8 mg/dl (P=0.9). The mean BMI did not change before and after the study (from 25.4+4.2 to 24.5+4.2 kg/m2, P=0.46). Serum total proteins and serum albumin were increased significantly after the study (respectively from 4.8+0.3 g/dl to 6.3+1.1 g/dl, P<0.01 and from 2.2+0.7 g/dl to 3.2+1.3 g/dl, P<0.01). We conclude that the low-protein diet supplemented with ketoanalogs is associated with a delay in progression of renal insufficiency, reduction in proteinuria, and maintain BMI. Ketosteril is safe, well tolerated, and efficacious in retarding the progression of renal failure and preserving the nutritional status of CRF patients.

Bilateral congenital megacalycosis in a young male patient

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PP

Congenital megacalycosis (CM) is an extremely rare developmental renal anomaly characterized by, usually unilateral, non obstructive dilatation of the calyces. It is considered to originate from the abnormal development of the renal medulla which in turn leads to hypoplastic pyramids and blunted dilated calyces. The net result is urine stagnation, predisposing to recurrent urinary tract infections (UTI) and calculus formation. Indeed, patients usually seek medical attention for symptoms related to the forementioned clinical conditions. The aim of this report is to present a case of bilateral congenital megacalycosis in a young male patient. A twenty-two year old male with multiple bilateral renal cysts, diagnosed by renal ultrasound, was admitted to the Nephrology Department of the General District Hospital of Rhodes for the investigation of repeated UTIs. Medical history included relapses of gross hematuria and recurrent UTIs in childhood. Although he was hospitalized, evaluated and received therapy neither medical records nor reports were available. Frequency of the episodes reduced in adolescence. Over the past three years, he suffered from severe episodes of renal colic on the left side due to the presence of a stone in the corresponding ureteropelvic junction which has been removed by nephrotomy two years ago. Family history for genetically transmitted kidney diseases was negative. Physical examination revealed no pathological findings. Hematological and biochemical parameters including renal function tests were normal except for a positive urinary culture with a multiresistant Serratia strain. Renal ultrasound depicted grossly enlarged kidneys, a calculus in the right pelvis, no signs of obstruction and multiple cortical cystic formations of similar size bilaterally. An intravenous urography (IVU) was performed that showed grossly enlarged kidneys dilated, blunted and outnumbered calyces and a calculus in the right pelvis. Pelves were slightly contracted while imaging of both ureters was significantly delayed without signs of intra- or extra-luminal obstruction. A CT scan of the abdomen confirmed the findings of the IVU. Micturating cystourethrography excluded vesicoureteral reflux and ascending urography excluded potential obstructive uropathy. The above findings were in agreement with the diagnostic criteria for CM in the literature. The patient received a three week course of antibiotic treatment and long term prophylactic therapy. Congenital megacalycosis is an infrequent benign developmental renal anomaly usually unilateral and exceptionally bilateral. It is associated with recurrent UTIs and calculus formation that posses no threat to future renal function in the absence of complications. Upon recognition regular follow up, appropriate antibiotic therapy in the presence of UTIs and treatment of risk factors such as renal calculi is advised.

Atherosclerosis in predialysis patients with chronic renal failure (CRF) and major risk factors

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PP

Atherosclerosis related cardiovascular diseases are the leading cause of death in patients (pts) presenting chronic renal disease. The aim of our study was to evaluate the relations between atherosclerosis, major risk factors and renal clearance. We studied 50 pts in pre-dialysis stage of CRF, 37 men and 13 women from 26 to 58 old, mean age 44.2 years. Pts were divided in 3 groups according to the creatinine clearance (ClCr): first group of 20 pts with ClCr 60 ml/min, second group of 15 pts with ClCr 40 ml/min and third group of 15 pts with ClCr 10-25 ml/min. We measured intima-media thickness (IMT) and plaque occurrence in the carotid arteries, using bidimensional doppler-echocardiography. A group of 20 hypertensive pts without renal failure, matched by age and sex, served as control group. The IMT values 0.64 versus 0.54 (p<0.005) were higher in patients with CRF. Pts with CRF had plaques 39.2% versus 15.4% (p<0.005) and number of plaques was

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also higher (p<0.005). The multiple regression analysis relations between IMT, renal clearance and presence of hypertension showed relevance (p<0.005). Also we found a relationship between hypercholesterolemia and the number of plaques in pts with renal kidney disease. We found no relationships between smoking and IMT, plaque occurrence and the number of plaques. Our results indicate that pts with chronic kidney disease show advanced atherosclerosis in the carotid arteries, compared with control subjects. IMT, plaque occurrence and the number of plaque increased with the decrease of renal clearance.

The prevalence and risk factors of left ventricular hypertrophy in chronic renal failure (CRF)

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PP

Left ventricular hypertrophy is an independent risk factor for morbidity and mortality in patients (pts) with CRF. The aim of the study was to estimate the prevalence and risk factors of left ventricular hypertrophy (LVH) in pts with different stages of CFR. The prevalence and risk factors of LVH were evaluated in 111 pts with CRF. The estimated risk factors were: hypertension, anemia, hyperphosphatemia, pulse pressure and creatinine clearance (ClCr). LVH was observed in 111 of predialysis patients (mean age 42+16.3 years). The pts were divided in 3 groups according to the ClCr: first group of 40 pts with ClCr 25-75 ml/min and LHV was diagnosed in 67.5 % of them; second group of 41 pts with ClCr 10-25 ml/min and LHV was diagnosed in 72% of them; third group of 30 pts with ClCr<10 ml/min and LHV was diagnosed in 84% of them. 74.5% of all the pts presented LHV. Pulse pressure was 67.1+6.8 in the first group 56.7+11, in the second group was 56+11 and the third group was 76+0.3. Systolic blood pressure was 160.3+17.9 in the first group, 148.5+21 in the second and 160+9.9 in the third group. Diastolic blood pressure was 93.2+11.1 in the first group 91.8+10 in the second and 84+9.6 in the third group. Hemoglobin and haematocrit were respectively 8.6+1.4 and 33.3+6.1 in the first, 8.1+1.8 and 31.6+6.4 in the second and 7.5+1.2; 32+5.9 in the third group. LVH is a frequent finding in patients presenting CRF. Prevalence of LHV increases with decline of renal function. We found that risk factors for LHV were: the decline in ClCr, increase of blood pressure, anemia and increased pulse pressure.

Effect of "Neobestin" supplementattion on total plasma homocysteine levels in CKD patients

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PP

Hyperhomocysteinemia inevitably accompanies chronic renal failure (CRF). A moderate elevation of tHcy levels is present in the early stage of chronic renal failure. It increases to parallel the degree of reduction in renal function, and persists after starting renal replacement therapy. It's also recognized in renal transplanted patients. The aim of the study was to evaluate the effect of "Neobestin" (1mg B12, 1mg folic acid and 20mg B6) supplementation on tHcy in stable chronic kidney disease patients (CKD pts). The examined group consisted of 18 pts (11 males) with a mean age of 57,17+15,34 yr (range 26-75). The mean baseline creatinine was 241+166,81 μmol/l, and urea 11,92+ 5,42 mmol/l. Causes of CRF were as follows: chronic pyelonefritis 9; chronic glomerulonephritis 4; hypertensive nephropathy 4 and diabetic nephropathy 1. All of them were evaluated twice: baseline and after 2 months "Neobestin"- 1 tablet/d sublingvaly. Hcy plasma levels (μmol/l) were determined by the Abbott IMx Homocysteine Assay. Folate in nmol/l (Fol) and Vitamin B12 in pmol/l (B12) were determined using Bayer ACS: 180 assays. The mean tHcy level at the starting supplementation was 22,04 + 9,19, vitamin B12 235,5 + 94,44 and Fol 21,80 +10,55. No significant changes were noticed in plasma creatinine and urea during the two months follow up period. B12 increased to 648,75+ 237,88 pmol/l and Fol to 42,91+11,71 nmol/l (p<0,001). In this preliminary examined group the mean tHcy decreased from 22,04+ 9,19 to 14,56+ 6,08 μmol/l (p<0,05). In 8 patients (40,4 %) individual Hcy value reached desirable value of 10,0 μmol/l. Promising results were found in the tHcy in pts supplemented by B12 based vitamin combination - "Neobestin".

Thyroid disfunction and ultrasonographic abnormalitys in uremic patients undergoing conservative menagement and haemodialysis

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PP

Thyroid gland size is often increased in patients with chronic renal failure. ESRD may have a higher frequency of goiter, hypothyroidism, thyroid nodules and thyroid carcinoma than the general population. The aim of our study was to investigate the prevalence of thyroid morphologic abnormalities in uremic patients undergoing haemodialysis and conservative management. Eighty one (81) patients (31 males, 50 females) with established chronic renal failure (CRF) where recruited in the study. 40 patients were on conservative management, 31 were on haemodialysis, and 10 healthy individuals were used as a control group. All patients were evaluated by ultrasonography of the thyroid gland, and serum thyroid hormone levels were measured by radio-immunoassay technique. Mean age of our population (N=81) was 56.20+11.80 years, and mean duration of CRF was 10.06+6.25 years. Group of 37 patients (52%) had thyroid nodules. TT4 levels in patients on conservative management were 109+43.47 nmol/l and on HD 93.77+25.25 nmol/l. These values were significantly lower for p<0.001 in comparison to controls. Serum concentration TT3 in group with different degree of CRF were 1.64+0.60 and on haemodialysis 1.76+0.59nmol/l, and values were significantly lower in compared with controls (p<0,001). Levels of FT4 (13.30+2.80 pmol/l, 12.02+2.24) and FT3 (3.96+0.85 pmol/l, 4.05+1.28pmol/l), were lower compared with controls (p<0.001). The mean basal thyroid stimulating hormone (TSH) level was 2.90+1.52 mlU/l on conservative management and 2.37+1.77mlU/l on haemodialysis and were the same in both patients and controls. 37 patients (52%) had thyroid nodules, mean value of serum TT4, TT3, FT4, FT3, were significantly lower in patients on conservative management and haemodialysis compared with controls. There were no significant differences in all parameters between the patients on conservative management and those on haemodialysis. Although 69 (97%) patients were clinically euthyroid, 2 (3%) patients had biochemical hypothyroidism and their treatment required substitute therapy.

Indiference in duplex ultrasound results between early stage type II diabetes mellitus and arterial hypertension patients

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PP

Evaluation of renal changes by conventional ultrasound (CU) and Doppler US (DU) in patients with Type II Diabetes Mellitus without diabetic nephropathy with less than 5 years duration arterial hypertension, and second group subjects with hypertension only. Material and methods: We have examined 27 patients with NIDDM aged 52.44+4.87 years, with diabetes duration 2.77+1.39 years and hypertension duration 11.6+9.62. Control group of 20 patients with hypertension aged 53.25+7.19 years with hypertension >5 years duration. All 47 patients had BMI >25 kg/m? and S-Creatinine clearance (Clcr) >90 ml/min. 11 diabetics had HbA1c>7.0% and 6 had microalbuminuria. On an "Aloca" 4000 SSD ultrasound scanner we measured renal (R) and parenchyma (P) volumes and Doppler parameters Vp, Vm, Vmin and RI. By t-test we did not found an inter-group difference in RV and PV. We have not found significant difference in Doppler results RI, PI, Vp, Vm, Vmin and DRI a. interlobaris between the groups (p>.05). RI correlated with hypertension duration (r=. 45, p<. 01). They had Clcr between 125,5 - 225,7 ml/min, which means hyperfiltration. Conclusion: We suggest no abnormalities were present in NIDDM patients with short duration, without diabetic nephropathy. Intrarenal hemodynamics was without difference between diabetics and hypertonics on anti-hypertensive treatment. That could be attributed to probable similar hemodynamics changes.

Early effects of the AT2 receptor antagonist eprosartan mesylate (EM) in diabetic patients with and without chronic renal failure

(CRF)

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PP

Angiotensin two (AT2) receptor antagonists are effective in the control of the arterial hypertension (AH) in patients with CRF. Different factors take part in the pathogenesis of the AH in diabetic (DM) patients: volume overload, sodium retention, activity of renin- angiotensin system (RAAS), activity of the sympathetic system (SNS) and the endothelin system. The aim of the study was to assess the effectiveness of the EM on the blood pressure (BP) and pulse pressure (PP) which are factors for the cardiovascular morbidity and mortality. Method: 22 patients (14 male and 8 female) with DM and AH, mean age 52±8 years, divided in 2 groups were followed for a 3 month period. At 0, 1st, 4th, 12th week the following parameters were determined: systolic BP, diastolic BP, mean arterial pressure (MAP), PP, heart rate, weight, height, basic laboratory tests. All patients received 600 mg EM (Teveten) once a day in the morning (10 of them as a mono therapy and the rest in combination with other antihypertensive drugs, which was not changed during the study). Results: Group A Parameter Baseline 1st

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week 4th week 12th week MAP (mm Hg) 113 + 6; 110 + 5; 96 + 7; * 90 + 5; ** PP(mm Hg) 70 + 8; 62 + 6; 51 + 5; * 45 + 4; ** Heart rate 75 + 9; 75 + 4; 70 + 4; 72 + 6; Group B Parameter Baseline 1st week 4th week 12th week MAP (mm Hg) 130 + 9; 127 + 4; 105 + 7; * 95 + 8; PP (mm Hg) 90 + 8; 100 + 2; 80 + 5; * 55 + 9; ** Heart rate 88 + 9; 86 + 3; 82 + 4; 75 + 4; * p < 0,01 ; ** p< 0,001 Conclusions: AT2 receptor blocker EM lead to significant control over BP and PP after 4th week in DM patients with and without CRF. This effect was probably due to its dual mechanism of action over AH - control over RAAS and SNS. The drug was well tolerated with no side effects.

Unfavorable prognostic factors in immunoglobulin A nephropathy

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PP

Immunoglobulin A nephropathy (IgAN) is a clinicopathological entity characterized by diffuse glomerular mesangial deposition of IgA as the predominant immunoglobulin. Renal biopsy reveals a spectrum of changes in glomerula, tubulointerstitium and blood vessels. 20-50% of all patients developed end-stage renal failure 20 years after onset of disease. The aim of this study was to analyze influence of clinicopathological and laboratory changes to prognosis of IgAN. The study included 60 patients with biopsy-proved IgAN without some other systemic diseases or purpura Henoch-Schőnlein. We analyzed influence of clinical features of disease, laboratory findings and findings of immunofluorescence and light microscopy to prognosis of IgAN. The study was partly retrospective and partly prospective. At the moment of renal biopsy 63,16% of patients had normal renal function, 31,58% had stage I and 5,25% had stage II chronic renal failure. At the end of study 21,05% of investigated patients were included into the worse stage of renal failure in regard to the initial stage. In this study we found severe histopathological changes in the group with already impaired renal function and these changes correlated with laboratory findings, clinical features and prognosis of disease. Normal renal function at the moment of renal biopsy provides smaller risk of further damage. Changes in the tubulointerstitial, mesangium, heavy proteinuria and hypertension influence to worse prognosis of disease. Crossing to the higher stage of renal failure was 1,24% per year and this requires long-term follow-up of patients with IgAN.

Effect of dual blockade of renin-angiotensin system on proteinuria

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PP

Pharmacological blockade of the renin-angiotensin system (RAS) with ACE- inhibitors (ACEI) or with angiotensin receptor blockers (ARB) has been shown to exert antiproteinuric effect in diabetic and non-diabetic proteinuria. Aim of the present study was the evaluation of the effect of dual blockade of RAS on proteinuria in non-diabetic patients (pts). 30 pts were included in the study (13 F/ 17 M, 35-70 year-old). At baseline 24h proteinuria was measured, as well as serum creatinine (Scr), serum Na+, K+, and blood pressure (BP); at baseline clinic BP was 168+25.8 / 81+1.1 mmHg, Scr was 1.39+0.4 mg/dl, serum Na+ 141+3.5 mmol/l, serum K+ 4.2+0.5 mmol/l, and urinary proteinuria was 3.1+1.5 g/d. After the completion of the baseline exams, an ACEI (Enalapril 20 mg/d) or an ARB (Valsartan 80 mg/d) was given for a period of 3 months; at the end of this period a repeat of all exams was done, and the combined treatment with ACEI+ARB was started and continued for a further 3 months period, and at the end all the exams were repeated. Monotherapy with ACEI or ARB resulted in a insignificant change of BP, while serum K+ and Na+, and Scr were not altered; 24h proteinuria decreased to 2.8+0.7 g/d, but the decrease was not significant. The combined treatment with ACEI+ARB resulted in a significant reduction of proteinuria (2.1+0.5 g/d vs 3.1+1.5 g/d at baseline, P<0.01). However, Scr increased to 1.6+0.16 mg/dl (P=0.04), while BP and serum K+ remained unchanged. We conclude that dual blockade of RAS may decrease proteinuria, although with a slight increase of serum creatinine but without hyperkalemia. The decrease of proteinuria was not associated with a lowering of BP.

The clinical significance of some autoantibodies in patients with hepatitis C associated glomerulonephritis with and without substance abuse

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PP

Chronic viral hepatitis C (HCV) is often associated with the development of glomerulonephritis - membranoproliferative

(MPGN), membranous (MGN), mesangioproliferative, IgA and cryoglobulinaemic nephritis, etc. Different immunological abnormalities have been reported in patients HCV-associated glomerulonephritides with or without concomitant heroin abuse, including positive antiphospholipid, antinuclear (ANA), antineutrophil cytoplasmic (ANCA), anti-DNA, antithyroid, anti-smooth muscle antibodies, positive rheumatoid factor (RF), cryoglobulinaemia, low complement levels, etc. The aim of our study was to evaluate the prevalence of anticardiolipin antibodies (ACL), ANA, ANCA, DNA, RF, cryoglobulinaemia and hypocomplementaemia in patients HCV-associated glomerulonephritis with or without other accompanying autoimmune diseases or heroin abuse. We investigated the sera of 5 patients with HCV-associated glomerulonephritis (3 male and 2 female, mean age 30.8 +/- 0.5, 19-46 years) for the presence of the following antibodies: ACL, ANA, anti-DNA, ANCA, RF, cryoglobulins (GC), and hypocomplemenaemia. Four patients had past history of heroin abuse, one patient received interferon-alpha and ribavirin treatment for chronic hepatitis C. Three patients had MPGN (one of them had Hashimoto thyroiditis and leukocytoclastic vasculitis, one had leukocytoclastic skin vasculitis, and one had leukocytoclastic vasculitis, liver cirrhosis and sicca syndrome) and 2 had MGN, 3 patients had past history of heroin abuse. Positive ACL had 3 patients, positive ANA - 2, positive ANCA - 3, positive RF - 4, cryoglobulinaemia had 4 HCV-positive patients, hypocomplementaemia had one HCV-positive patient with cryoglobulinaemia. Anti-DNA antibodies were negative in all the investigated subjects. The authors discuss the pathogenic significance of ACL, ANA, ANCA, RF, CG and hypocomplementaemia in patients with HCV-associated glomerulonephritides with and without concomitant heroin abuse.

Acute renal failure following ingestion of Amanita phalloides mushrooms

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PP

Amanita phalloides poisoning is the most common cause of lethal mushroom poisoning. A specific antidote against the amanitin toxin is not available. This study reports results from 9 patients treated for amanita phalloides poisoning between 2000 and 2004. Hemodialysis and hemoperfusion was carried out immediately after arrival in our hospital in all patients, fresh plasma in 4 patients, and human albumin solution in 2 patients. Ancillary drugs, including penicillin and silibinin, were also used for detoxification, correction of blood-clothing deficiencies, and hepatic protection. Two patients died of acute hepatic failure. The results assessed using mortality and frequency of complications, have indicated that hemodialysis and hemoperfusion is a safe and effective treatment for amanita phalloides poisoning but the further investigations are needed, especially involving measurements of efficacy and efficiency of toxin removal.

The influence of low protein diet in the erythropoietin treatment of renal anemia

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PP

Anaemia is a major complication of chronic renal insufficiency (CRI). Its treatment with EPO in the last decade, improved radically the quality of life, the cardiovascular complications and mortality of uremic patients. We tried to evaluate the influence of quantity of dietetic proteins in the improvement of renal anaemia by EPO. Two groups of patients with advanced CRI (creatinine clearance < 25 ml/min) were treated with EPO for one year. The first group (24 pts) received low protein diet (0.6-0.7 gr/kg/day). The second group (15 pts) received very low protein diet (0.6-0.7 gr/kg/day) plus ketoanalogs of essential aminoacids (ketosteril). The aim was to maintain a stabilised level of Hb (11.5-12.5 gr/dl). The level of Hb in both groups was similar (11.6+0.4 gr/dl and 11.7+0.5 gr/dl). The dose of EPO that was almost the same in the beginning (55.3+8.2 UI/kg/week and 54.8+9.7 UI/kg/week), was not changed in the first group but was decreased in the second group until 45.7+8.4 UI/kg/week at the end of the study period ($p<0.0001$). In advanced CRI the reduction of dietetic proteins (0.35 g/kg/day), was associated with a lower EPO dose that was needed for maintaining the same level of Hb. Probably this effect is linked with the reduced dietetic phosphates and secondary correction of hyperparathyroidism.

Advantages of treatment with enalapril in patients with chronic kidney disease

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PP

The renoprotective effects of ACE-Inhibitors in Chronic Kidney Disease (CKD) are due to their hemodynamic, non-hemodynamic and antiproteinuric effects. For this reason these medicaments are considered advantageous in comparison with other antihypertensive drugs. Our

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objective was to study the antiproteinuric and antihypertensive effects of enalapril in patients with CKD. This was a one-year, prospective study and included 68 patients with CKD (age: 16-63 years). The renal function was 10-80 ml/min and blood pressure > 130/85 mmHg. All patients, after a wash out period of two months, were treated with enalapril 5-10 mg/day. The blood pressure and proteinuria were measured every two weeks. A lowering of mean arterial pressure of 10.7 mmHg was shown at the end of our study in patients with initial HBP and only 3.7 mmHg in normotensives. A correlation existed between initial MAP and the change of MAP after the treatment ($r = 0.62$, $p < 0.0001$). The response of BP was not dependent from underline pathology or from concomitant treatment. 44 % reduction of urinary protein excretion was observed. No difference existed in urinary protein excretion between patients with glomerulopathy and those with tubulo-interstitial disease. The reduction of proteinuria correlated with initial proteinuria and it was greater when there was a better antiproteinuric effect of the drug ($r = 0.31$, $p < 0.001$). An increased potassium level (0.4 mmol/l) was observed after treatment with enalapril. Two patients interrupted the treatment because of hyperkalemia and hypotension. The level of Hb was reduced initially (0.4 gr/dl) but later it was stabilized. Enalapril was shown an efficacious drug with good antihypertensive and antiproteinuric effects in patients with CKD. Its antihypertensive and antiproteinuric effects are greater in patients with higher levels of BP and proteinuria.

Treatment of membranous nephropathy presenting with nephrotic syndrome -our experience

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PP

The aim of this study was to evaluate the efficacy of immunosuppressive therapy in the treatment of patients with idiopathic membranous nephropathy (MN) presenting with nephrotic syndrome (NS). A total of 12patients with MN and NS (10 male, 2 female, with the average age 48,2+11.3) were enrolled in this study during the period of 3 years. The diagnosis of primary MN was confirmed by renal biopsy. The mean value of creatinine clearance and 24hrs proteinuria was 77 +15.1 ml/min and 11.1 +4,8 g, respectively. All patients received bolus doses of methylprednisolone (500 mg during three consecutive days) following by oral prednisone (0.75mg/kg/bw.) during next 1.5 months. After this period of time the dose of oral prednisone was gradually reduced to maintenance dose of 10mg daily. The follow-up period was 6 months to 2 years. During the period of 3 +1.5 months a complete remission was noticed in 8 patients (proteinuria 0.261 +0.145 g/24h) and 2 patients had a partial remission (proteinuria 1.3 +0.4 g/24h). The 2 non responders after 3 months was treated by oral prednisone and pulse doses of cyclophosphamide (1000mg monthly) during next three months and partial remission (proteinuria 2.1 +1.1g/24h) was achieved. The creatinine clearance in both groups of patients (one treated with corticosteroids and the other treated with combination of cortricosteroids and cyclophosphamide) was significantly improved after the period of 5 months and the average value was 95,2 +11.1ml/min. On the basis of our results we concluded that steroids are effective immunosuppressive agents in the treatment of patients with MN presenting with NS.

The role of hypertension in patients with Lupus glomerulonephritis

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PP

Systemic lupus erythematosus (SLE) is autoimune disease that may involve skin, kidney, serosa, joints and blood vessels. Proteinuria, hypertension and dislipidemia are associated nonimmunological risk factors participated in renal function determining. The aim is to establish connection between grade of arterial hypertension expression and kidney changes in patients with SLE. Retrospective study of patients with lupus nephritis in which is established prevalence of hypertension and in which is tested eventual connection between hypertension and damage of renal function. We examined 50 patients average age of 43,9 +/- 9,8 years and 39 was female and 11 was male. Correlation was showed relation between hypertension and hystologic class of lupus nephritis. Hypertension was graduated as mild (diastolic pressure 95-99mmHg, moderate 100-114, and significant > 115. Damage of renal function creatinine 130, was graduated as mild 130-200, moderate 200-300, and significant 350. Prevalence of hypertension has been 49%. Incidence of renal damage has been higher in patients with hypertension $p<0,05$. Likewise mean value of creatinine has been higher in this group $p<0,02$. Presence of hypertensive vascular disease of kidney was detected in patients with high incidence of renal damage and worse renal function than patients in hypertensive group. Treatment of hypertension

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was primary in early stadium of lupus nephritis, regarding on prevention of further renal function damages and evolution of disease in patients with SLE.

Patients on maintenance hemodialysis with atipycal cerebral movement disorders

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PP

Acute and subacute extrapyramidal movement disorders have rarely been reported in uremic patients. "Uremic encephalopathy" is usually applied to cortical involvement in uremic patients, as evidence of frequent presence of seizures and abnormal findings on electroencephalography in uremic patients. Involuntary movements typically consist of asterixis and myoclonus, which may also reflect cortical involvement in these patients. The objective of this study is to establish a more accurate clinical profile of this rarely described clinical syndrome in uremic patients with end stage renal disease and co-morbidity like hypertension or diabetes mellitus. We prospectively studied seven patients from January 2003 to December 2004. A total number of 230 uremic patients on maintenance hemodialysis were analyzed among whom seven were identified with present acute or subacute movement disorders. Patients who had clinical manifestations of movement disorders were selected and their records were further analyzed. Laboratory tests included measurements of arterial blood gas, serum glucose, electrolytes, blood urea nitrogen and creatinine in all patients. Parathyroid hormones were measured in all patients. Each patient had been examined by neurologist. Head CT was performed in all patients and MRI in one patient. Repeated neuroimaging studies were performed in five of seven patients. The clinical courses, neurological outcomes and long-term outcomes of these patients have been followed up to the present time. All patients had acute or subacute movement disorders, four of them were diabetics and all of them had hypertension. They had acute onset Parkinsonism or dyskinesias, together with various symptoms such as consciousness disturbance, dysarthria, dysphagia or ataxia. They had uniform neuroimaging findings. The occurrence of this syndrome in uremic patients implies a complicated clinical course and poor prognosis. Treatment of this syndrome is uncertain. It is obvious that with removal of uremic toxins and metabolic acidosis correction there is improvement of the patients' condition.

Changes of circadian blood pressure rhythm in relation to changes in the global renal function

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PP

Blood pressure (BP) has a diurnal pattern primarily related to activity and sleep. The extended use of ambulatory monitoring has permitted the identification of many conditions in which the circadian rhythm of BP is altered. Chronic renal failure patients may lack the normal nocturnal decline in BP during sleep. Factors other than renal failure, including age, diagnosis of diabetes mellitus, autonomic dysfunction, also may affect circadian BP profiles. Aim: To assess the ambulatory BP profile in hypertensive non-hemodialysis patients with chronic renal failure and to further elucidate the relationship between renal function and circadian BP variation. Study design, material and methods: We compared day/night circadian BP changes in 72 hypertensive, non-diabetic patients divided in three groups: group A, with GFR>90 mL/min, n = 28; group B, GFR: 31-90 mL/min, n = 27; group C, GFR >15< 30 mL/min, n = 17 non-hemodialysis patients. Ambulatory monitoring of BP was performed by noninvasive, automatic recordings for 24h at sampling intervals of 20 min. Global renal function was estimated by the Cockroft & Gold formula. Results: Patients with GFR below 30 ml/min had the highest daytime and night-time BP. The systolic and diastolic night/day BP ratio differed between the groups. With declining of GFR, the night/day BP ratio rose. The lowest nocturnal fall of BP was demonstrated by the patients with the lowest GFR. Inversed diurnal rhythm (night fall of blood pressure less than 10% of the daytime value and night time BP higher than the day time value (n/d ratio > 100%) was demonstrated in 11/17 patients with GFR below 30 ml/min, in 16/27 patients with GFR between 31-90 ml/min, and in 11/28 patients with normal renal function. Correlation analysis revealed inverse correlation between the GFR and the night-time SBP r= -0.48, p=0.000, and night/day SBP ratio r= -0.32, p=0.007. Correlation with the DBP and n/d-DBP ratio with GFR was inverse and even stronger than with the SBP: r = -0.50, p=0.00. Conclusions: In patients with chronic renal disease nocturnal BP elevation may be diagnosed by ambulatory 24-hour monitoring. Estimated creatinine clearance and nightly BP dips were inversely correlated, i.e. with decreasing renal function both night SBP and DBP dips were gradually attenuated. The blunting or reversal of the normal circadian BP pattern seen in some chronic renal failure hypertensive subjects may be attributable to the association between chronic renal failure and cofactors associated with abnormal

circadian BP. Casual measurements of BP confined to daytime may underestimate a hypertensive condition associated with chronic renal failure and may require adaptation of antihypertensive treatment.

Hepatitis C in renal patients

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PP

Hepatitis C became the major form of hepatitis in dialysis patients.

Hepatitis C virus (HCV) was identified in 1989 as the major cause of parenterally transmitted NANBH. In 1993 HCV survey revealed an average prevalence of HCV of 18 % among HD patients with a large variation among the different countries ranging from 1 % in Finland to 100 % in Romania. Transmission of HCV is effectuated by medical procedures and nosocomial. In hemodialysis HCV is transferred to the patients by: transfusional history, patients-to-patient and hospital personal.

Renal transplant recipients who have HCV-positive donors, have a higher risk of liver disease, including fulminant hepatitis and fibrosious cholestatic hepatitis (J. Morales et al., NDT, 2000, 15, suppl.8). HCV-positive kidneys should not be transplanted into HCV-negative patients. Prevalence of HCV in Bulgarian dialysis patients is: % in Varna: 53 (in 2001) and 20 (in 2005), Pleven: 60 (in 1998), Sofia : 42 (in 1999). According to our experience HCV can be decreased after appropriate measures.

Proteinuria-factor of progression of the renal failure in adult polycystic kidney disease

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PP

The role of proteinuria on the progression of the renal failure, was estimated in 25 patients with adult polycystic kidney disease and with chronic renal failure, mean age 52+/-9,6 years (17 males and 8 females). Data were compared to a group of patients with normal renal function. The follow-up period was 3 years. The results presented that proteinuria/24 hours, in patients with chronic renal failure was 0,39+/-0,44 vs 0,18+/-0,15 in patients with normal renal function. Although overt proteinuria is rare in these patients, the difference noticed between the 2 groups of patients, was statistically significant (p<0,001). Using Kaplan-Meier's life-tables for estimation of the effect of proteinuria on the progression of the renal failure, the influence of proteinuria was confirmed (p<0,03). It can be concluded that proteinuria is important factor for progression of the renal failure in adult polycystic kidney disease.

Hypertension in adult polycystic kidney disease

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PP

In order to estimate the influence of hypertension on the progression of the renal disease, 60 patients with adult polycystic kidney disease, mean age 44+/-12.2 years, were evaluated during the period of 3 years. 35 of them were with normal renal function and 25 with chronic renal failure. Criteria for renal failure were: serum creatinine over 130 micromol/l and glomerular filtration rate above 90 ml/min. During 3 years follow-up, the blood pressure was controlled with 24 hours ambulatory blood pressure monitoring at the beginning, after 12 months, after 24 and after 36 months. The data presented that 64% of the patients with normal renal function and all patients with chronic renal failure, were with arterial hypertension. Statistically significant difference was found between the 2 groups of patients, for systolic (p<0,002), for diastolic (p< 0,002) and for MAP (p<0,001). Statistically significant correlation was also found between the glomerular filtration rate and the MAP. The estimation of the progression of the renal disease was determined using Kaplan-Meier's statistical analysis with graphic presentation. The obtained results presented that 80% of the patients without hypertension, preserved the normal renal function, after 36 months follow-up, but only 40% of those with hypertension have normal renal function after the same period (p<0,04). That fact confirms the influence of hypertension on the progression of the renal disease in adult polycystic kidney disease.

Urinary tract infections in adult polycystic kidney disease

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Urinary tract infections are common in adult polycystic kidney disease. Approximately, 46% females and 33% males, with adult polycystic kidney disease have urinary tract infection. 35 patients with adult polycystic kidney disease (15 males and 20 females), mean age 38+/-11,02 years, were evaluated from the aspect of urinary tract

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infection. Criteria for presence of urinary tract infection were: more than 10 leucocytes in urine sediment and positive urine culture. The follow-up included urine analysis every 6 months during the period of 3 years. The obtained data, presented that 22% of the patients had urinary tract infections. Kaplan-Meier's statistical analysis demonstrated that the progression of the renal disease depends on the presence of infection in these patients. Comparing the two groups of patients (with and without urinary tract infection), we found that patients with infections had worse renal survival ($p<0.05$).

Serum paraoxonase activities in glomerulonephritic patients

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PP

Cardiovascular disease is the most common cause of morbidity and mortality in patients with chronic renal failure. In glomerulonephritic patients have increased risk for CVD but its etiology is unclear. The aim of the present study was to evaluate oxidizability of apolipoprotein B-containing lipoproteins and serum paraoxonase (PON1) / arylesterase activities in glomerulonephritic patients had normal lipid parameters and creatinine levels. Methods: Thirty-two patients with glomerulonephritis, 22 healthy controls were included in this study. A total of 32 patients including nine with membranous GN, eight with immunoglobulin A nephropathy, eight with mesengial proliferative GN, five with focal-segmental glomerulosclerosis, one with diffuse proliferative GN and one with minimal chance disease having biopsy proven GN were enrolled into the study. We compared PON1, arylesterase, serum lipids, urea, creatinine, hemoglobin, total protein, albumin in groups. Results: Glomerulonephritis and control groups serum urea, creatinine, total protein, albumin, uric acid, hemoglobin and lipid parameters were similar ($p>0.05$). PON1 activity was significantly lower in GN group than controls but there were no statistically significant difference on arylesterase activity between groups. Oxidizability of apolipoprotein B-containing lipoproteins was significantly higher in GN group than controls. Conclusion: Our study shows that normal serum levels of creatinine, lipids and proteins, increased oxidizability of apolipoprotein B-containing lipoproteins, decrease in PON1 activity in patients diagnosed of GN should be considered important and immediate commencement of preventive as well as curative treatment in other to avoid the risk of cardiovascular and renal problems in future will be a correct approach.

Effectiveness of prednisolone and small doses of cyclosporine a in patients with idiopathic membranous nephropathy (preliminary report)

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PP

Membranous nephropathy (MGN) remains the most common cause of adult onset nephrotic syndrome and a leading cause of renal failure. The natural history of idiopathic membranous nephropathy (IMN) is variable and its treatment is controversial. Various immunosuppressive therapeutic regiments have been attempted, including steroids and cytotoxic agents. This study was aiming at estimating the effectiveness of short-term prednisolone and small doses of cyclosporine A (CsA) as first-line treatment in IMN patients with nephrotic syndrome. Eleven patients (10 males, 57+12 years old), with nephrotic syndrome due to IMN (proteinuria 9.2+5.8 g/24h) and well-preserved renal function (MDRD GFR: 69+17 ml/min) were studied. They were initially treated conservatively for 6 months with no significant benefits on proteinuria and renal function over the monthly follow up. Then, they were treated with prednisolone (starting dose: 30mg/day) for 2 months with subsequent tapering and stopping at 6 months. Concomitantly they received CsA (starting dose: 3mg/kg bw/day) for a period of 10 months. Results: Complete remission was observed in 1 patient, partial remission in 6 (proteinuria 0.8+0,4) and reduction of proteinuria in 2 (3.9+2.1) while 2 had no response. The renal function showed a small decline but not statistically significant (final MDRD GFR: 63+21 ml/min, $p=0.10$). The study is in progress with a larger number of patients and prolonged CsA treatment. Conclusion: Idiopathic membranous nephropathy nephrotic patients treated with prednisolone and small doses of cyclosporine A showed a significant remission rate of the nephrotic syndrome, but no similar beneficial effect on renal function.

Immunosupressive treatment of lupus nephritis

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PP

Over the past decade cyclophosphamide has come to assume an increasingly prominent role in management of

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severe, life-threatening manifestations of lupus nephritis (LN). We have studied the effects of immunosuppressive therapy in our patients (pts) with LN. 40 pts with LN, 29 females and 11 males, with the mean age 33+ 4,3 years were studied prospectively during a period of 5-62 months. Pts were divided in three groups: the first group of 13 pts (mean age 31,4 + 4,9 years) was treated with cyclophosphamide, the second group of 15 pts (mean age 32 + 4,8 yrs) was treated with prednisolone and the third group of 12 pts (mean age 34,2 + 3,1 yrs) was treated with cyclophosphamide and prednisolone. Nephrotic range proteinuria was present on 17 pts, respectively in 6, 6 and 5 of each group, 10 pts (respectively 3, 3, 4 of each group) had impairment of renal function (creatininemia 2 mg %). After 6 months of treatment, proteinuria decreased in 11 pts (respectively in 6, 3, and 2 of each group). Difference was significant between first and second group, and first and third group (p<0,038, p<0,05). Renal function improved in 7 pts, (respectively in 4, 2, 1 of each group; p<0,05, p< 0, 04). 3 patients, one of each group, died due to the progression of the disease. We conclude than pulse cyclophosphamide treatment in our pts was more effective than the treatment with prednisolone alone and both combined. The pts treated with cyclophosphamide had less undesirable effects than the other pts treated with prednisolone alone and cyclophosphamide combined with prednisolone.

Leptospiral acute renal failure

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PP

Leptospirosis is the most widespread zoonosis in the world, but it's a rare case of Acute Renal Failure in western countries. In the pre-dialysis era, ARF was an important cause of death, but now generally it has a good prognosis. We studied prospectively 11 hospitalized patients with Leptospirosis. 8 of them were selected because they developed ARF. The mean age was 35, 2 + 14, 8 yrs old. The ratio M: F was 7:1. In all cases with ARF the kidney involvement was evident in the second phase of the disease, (the immune phase). All patients had fever, prostration, myalgia and jaundice. Also all of them had hepatomegaly and hemorrhagic manifestations. Hypotension was noted in 6 pts. Oliguria was present in 6 pts. Serum creatinine ranged between 3, 8- 9, 3 mg/dl. In three pts we observed significant hypokalemia, despite high levels of creatininemia. The diuretic phase lasted more than 1 week, and was associated with a good prognosis. The maximum urine volume reached mean level of 4200+ 1300 ml/day. In 3 pts it was necessary the dialysis treatment, (1 pt in hemodialysis and 2 pts in peritoneal dialysis). 1 pt died in the oliguric phase due to severe gastrointestinal bleeding. This pt had also liver involvement, progressive jaundice and high level of bilirubinemia. 10 pts had a complete recovery, but after a prolonged period which lasted 1-4 months. The correction of hypotension, the fluid replacement, as well as the proper use of antibiotics and the adequate dialysis, influenced positively on the prognosis of Leptospirosis.

Weekend hematurias: how should one detect source of hematuria?

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PP

Determination of the origin of hematuria is a serious challenge for the nephrologists. The type of hematuria (glomerular or non-glomerular) determines further work up, including appropriate laboratory studies, endoscopic procedures, imaging studies or renal biopsy. Of particular interest are those patients with recurrent or short lasting hematurias, usually during weekends when there is no possibility to examine the morphology of urinary erythrocytes. In this study we present the results of our strategy to encourage the patients with recurrent hematurias to collect urine sample during an episode of gross hematuria and freeze until shipment to the laboratory during working days. There were 15 patients who collected urine samples in this way. The analysis was performed using SDS-PAG electrophoresis of urinary proteins. The electrophoregrams showed glomerular type of hematuria in three patients (membranoproliferative GN 1, IgA nephropathy 2). Non-glomerular hematuria was characterized by the typical presence of 28 KD band (Apolipoprotein A-1). The imaging studies demonstrated: hemorrhagic cystitis in 6, idiopathic hypercalciuria in 2, ureteropelvic junction obstruction in 2, and retrocaval ureter in 1 and in one case etiology was not identified. In conclusion: In the cases when fresh urine samples are not available for analysis, urine samples collected during an episode of gross hematuria, may be frozen and subsequently proceeded for SDS-PAGE analysis of urinary proteins. The presence of APO-A1 strongly suggests non-glomerular origin of hematuria.

Dual blockade of renin-angiotensin system in primary glomerular diseases

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PP

Although Angiotensin-Converting Enzyme Inhibitors (ACEI) and Angiotensin Receptor Blockers (ARB) are considered as renoprotective in non-diabetic kidney disease, their combination as conferring more effectiveness than either agent alone needs to be further elucidated. Twenty-three (16M, 7F) patients, 45.7+14.3 (range 22-70) years old with primary glomerulopathies were studied. All patients received valsartan 160 mg/day for 9 months and subsequently, for additional 15 months, they received either valsartan 160 mg/day plus benazepril 20 mg/day (Group A, 10 patients) or valsartan 160 mg/day plus benazepril 20 mg/day plus hydrochlorothiazide 25 mg/day (Group B, 13 patients) according to baseline proteinuria: <3 g/day or >=3 g/day, respectively. Systolic Blood Pressure (SBP), proteinuria and GFR based on MDRD formula were registered at baseline, at 2nd, 3rd month and every 3 months thereafter until the end of follow-up for 24 months. SBP (mean+SD) was reduced significantly ($p<0.01$) by valsartan 160 mg/day as early as 2 months after treatment start in both groups (Group A: from 146.1+20.9 to 127.5+8.0 mmHg, Group B: from 144.8+16.3 to 128.2+6.2 mmHg) and did not change thereafter until the 9th month. During combination therapy SBP was further reduced ($p<0.01$) in both groups and this reduction was more pronounced in Group B at 12th, 15th, 18th month of study (SBP at 18th month: 118.3+2.2 mmHg in Group A and 113.2+6.6 mmHg in Group B, $p<0.01$). Proteinuria (mean+SD) decreased significantly ($p<0.01$) at every study period only in Group B and this decline was greater ($p<0.05$) by combination treatment (at baseline, 2nd, 9th, 12th, 24th month: 5.3+1.8, 3.4+1.3, 3.2+0.9, 2.4+0.9, 1.9+0.9 g/day, respectively). In Group A (at baseline 1.7+0.6 g/day) no significant change was found. SBP and proteinuria were correlated (Group A: $r=0.37$, $p=0.001$, Group B: $r=0.52$, $p<0.001$). Baseline GFR (mean+SD, ml/min/1.73m2): 89.1+24.2 in Group A and 71.9+20.4 in Group B did not decrease significantly during follow-up. It is concluded that ACEI and ARB combination is more effective than ARB alone regarding amelioration of proteinuria and hypertension in glomerular diseases, especially in those with higher protein excretion.

Effect of combined angiotensin-converting enzyme inhibition and angiotensin receptor blockade on proteinuria and renal function in primary glomerulonephritis

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PP

Proteinuria is the main predictive factor in the progression of renal failure in glomerulonephritis. Angiotensin-converting enzyme inhibitors (ACEI) or angiotensin II receptor blockers (ARB) reduce proteinuria and prevent renal function deterioration. This prospective study was performed to investigate whether a combination of an ACEI with an ARB produces a more profound antiproteinuric effect than ACEI alone. Ten patients with biopsy-proven primary glomerulonephritis (5 IgA nephropathy, 2 membranoproliferative glomerulonephritis, 2 focal segmental glomerulosclerosis and 1 membranous glomerulonephritis; 6 males and 4 females; aged between 29 + 11 years) were included in the study and followed up for 32 weeks. Their proteinuria ranged between 2.2-8.6 g/day (mean proteinuria 3.4 + 1.9 g/day). None of them received immunosuppressive drugs. All patients were given ramipril 2.5 mg/day for 12 weeks. At the end of the 16th week irbesartan 150 mg/day was added to the regimen. Combination of ramipril and irbesartan was administered to all patients for 16 weeks. Clinical evaluation, routine laboratory tests, blood pressure measurements were done. Glomerular filtration rate (GFR) was measured prior to the study, at the end of the 16th week and at the end of the study. In the first 16 weeks of the study (ramipril alone) proteinuria decreased from 3.4 + 1.9 g/day to 2.5 + 1.3 g/day ($p<0.05$). With the addition of irbesartan, proteinuria decreased from 2.5 + 1.3 g/day to 1.7 + 0.9 g/day ($p<0.05$). GFR did not change significantly at follow-up (decreased from 80.9 +10.3 ml/min prior to the study to 78.3 + 8.3 ml/min at the end of 32 weeks; $p>0.05$). Addition of irbesartan did not significantly reduce systolic and diastolic blood pressure. Ramipril alone reduced proteinuria by 27%. Combination of ramipril and irbesartan induced a more remarkable reduction in proteinuria (51%; $p<0.05$). The additive antiproteinuric effect of the combined therapy could not be attributed to a significant reduction of blood pressure or GFR. In conclusion, a combination of ACEI and ARB in patients with glomerulonephritis produces a more profound decrease in proteinuria than ACEI alone. This additive antiproteinuric effect does not depend on reduction of blood pressure or GFR.

Hypertensive nephroarteriolosclerosis in subclinical phase

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PP

Aims of this study were: 1) to define presence of hypertensive nephroarteriolosclerosis (HNAS) in subclinical phase, on the basis of clinical criteria and inrtrarenal resistance index 2) to establish association of certain parameters with nephroarteriosclerosis, as possible risk

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factors contributing to its occurrence. Material: 39 patients hospitalized at the Clinic of Nephrology in the period 2002-2003, discharged with the diagnosis of essential hypertension. A group with nephroarteriosclerosis (NAS)-15 patients and a group without nephroarteriosclerosis (wNAS)-24 patients were compared. Method: A retrospective, cross-section study of clinical charts of patients hospitalized at the Clinic of Nephrology for treatment of hypertension. Nephrosclerosis was defined on the basis of exclusion of prior renal disease and secondary hypertension, increased intrarenal resistance index (RI) and a history of hypertension before renal occurrence of renal changes. Numerical and categorical variables were compared between the groups. Results: Creatinine clearance was significantly lower in the wNAS group, although there were no significant differences in creatinine between groups (99.55+/- 30.56 versus 133.57 +/-28.13 (p=0.0005). Patients in the NAS group were at the same time significantly older, with an average in the interval 58.5+/-9.73 years, versus wNAS group (48.6+/-11.03), p=0.0169. There was no difference between the values of blood pressure between the two groups nor a clear association of the values and regulation of blood pressure with intrarenal resistance index. Conclusions: 1. Intrarenal resistance index on Doppler renal echosonography may be a valid early marker of hypertensive nephrosclerosis in subclinical phase. 2. Variability of blood pressure on 24-hour blood pressure monitoring and age may be associated with nephroarteriosclerosis. 3. Blood pressure values, regulation of hypertension with antihypertensives, time with hypertension, smoking and family history of hypertension are not correlated with nephrosclerosis.

Angiotensin receptor blockers safely decrease proteinuria in secondary amyloidosis patients

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PP

Massive proteinuria is almost always observed in patients with secondary amyloidosis. Several studies have reported a beneficial effect of angiotensin converting enzyme inhibitors on proteinuria in these patients. Little data are available about the antiproteinuric effect of angiotensin receptor blockers in patients with renal amyloidosis. In this study we investigated the antiproteinuric effect of ARB irbesartan, on proteinuria and renal function in normotensive patiens with secondary amyloidosis and compared it with an ACEI cilazapril. Twelve patients with biops-proven AA amyloidosis with nephrotic-range proteinuria were included in the study. Colchicine was administered to all patients. Daily proteinuria, serum creatinine and albumin levels, glomerular filtration rate were measured and mean arterial blood pressure was determined. The patients were divided into two groups with similar age and gender. Six patients were given cilazapril 1 mg /day and the remaining six patients received irbesartan at a dose of 150mg/day for six months. There was no significant difference in mean arterial blood pressure measurements, serum creatinine, albumin levels and glomerular filtration rate between two groups prior to the study. Cilazapril decreased proteinuria by 29% at six months, while irbesartan decreased proteinuria by 24% at six months in patients with secondary amyloidosis. Serum albumin levels increased significantly in either group (from 2.3 + 0.3 g/dl to 2.8 + 0.5 g/dl in the cilazapril group, from 2.2 + 0.4 g/dl to 2.6 + 0.4 g/dl in the irbesartan group). There were no significant differences in mean arterial blood pressure, serum creatinine, albumin levels and GFR between two groups. We concluded that ARB irbesartan may be used to decrease proteinuria in normotensive patients with severe proteinuria due to secondary amyloidosis and may be considered as an alternative to ACEI.

Population-genetic properties of Balkan endemic nephropathy

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PP

Out of numerous analyses of BEN in last decades in characteristic localities in R. Serbia (e.g. Lazarevac, Chepure, Aleksinac, Brestovac, etc.), an impression of population-genetic, familial, and environmental causes of this fatal illness has been established. A disbalance between the first and last of them, with a definite familial (i.e.developmental-genetic) predisposition of individuals that grow in such bio- eco- environments, gives rise to such a malfunctional expressivity of their urogenital systems based on a continuous deterioration of their kidneys.

Using specific population-genetic markers it should be possible to predict a predisposition of some individuals, or even of some of their groups, to suffer of some illnesses. Such markers exist at biochemical, as well as at morpho-physiological levels, and among the later ones we selected cca. thirty characters proven to be inherited as homozygously recessive, which can be differently present among individuals of a population. In some of individuals only two of such HRCs are present, in others even 18 out of 30 observed, and it came out that among the patients from the hospitals with urogenital, pulmonal, cardiovascular, neuropsychiatric and some other diseases, the presence of such homozygously recessive characters (HRC-test) turns

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out to be significantly higher than among healthy people as a control.
In this report we submit our new analyses of HRC-tests on the patients with BEN, and from BEN-affected regions, together with other population-genetic studies to distinguish if populations from such regions should be considered to be different from the neighboring regions where BEN is almost absent. Initial studies suggest that a positive answer could be given in both directions, but a deeper analysis will hopefully give much broader answer about the causes between eco- and geno-disbalances that lead to the appearance of BEN in so many specific regions of our Balkan Peninsula.

Value of intrarenal resistance index (RI) and progression of diabetic nephropathy

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PP
We hypothesized that in patients with DN an increased intrarenal RI (≥70) may correlate with the rate of decline in renal function and predict the progression of the renal disease. Patients and methods: Intrarenal RI values were obtained by duplex Doppler sonography from intraparenchimal arteries, either the arcuate or interlobar arteries of both kidneys. Clinical and metabolic parameters and renal function were also evaluated at baseline and after three and six months. The patients (n=40) were divided according to their intrarenal RI values in a group with values of ≥70 and a group with values <70. Progression of renal function (delta creatinine clearance, delta Ccr) was estimated by linear regression of the slope of decline of Ccr plotted against time. Results: Sixteen patients (40%) had an intrarenal RI value ≥70 at baseline. Eight patients (50%) had a decline in renal function after six months. In comparison, in patients with intrarenal RI values <70 (n=24), only 2 had a decline in renal function. In multivariate regression analysis, proteinuria, higher baseline Ccr and RI were independent predictors of declining renal function. Conclusion: An intrarenal RI value of ≥70 identifies diabetic patients at risk for progressive renal disease. The RI of intraparenchimal arteries seems to be a reliable marker of intrarenal changes and can be used as a non-invasive, easily available parameter of the evolution of the diabetic nephropathy.

Infection as an acute insult or intrahospital complication – risk factors in the outcome of the acute renal failure

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PP
The acute renal failure (ARF) is a complex syndrome by itself, with an uncertain outcome, and very often with a fatal outcome (mortality 20-80%). The detected infection as a cause or a complication of the syndrome is a risk factor (RF), which unfavorably determine the outcome.
This study is a prospective clinical research performed in a period of four years. Sixty-eight clinical and laboratorical parameters, titled as risk factors, performed in 112 patients have been analyzed.
On the basis of the univariate statistical analysis with significant correlation on the outcome, 27 risk factors have been determined. The discriminate analysis was used as a classification of the patients in two groups (died and survived). The used scoring system was SOFA (sepsis-related organ failure assessment). With the Student's t-test, the infection as an acute insult has a significant statistical meaning in the relation to both groups (survived and died), with p=0.000506.
But, the infection as an intrahospital complication has no statistical significance with p=0.611866. Significant p in the relation to the outcome has shown the laboratory parameters: leucocytes p=0.019, thrombocytes p=0.023, total protein = 0.000 and bilirubin values p=0.000. The used s-sm for SOFA estimation has shown statistical significance in the relation to the outcome with p=0.000. If we point out that the mortality in the study was 22,3%, and the post-operative ARF and the malignant cases were excluded, the influence of the infection and some of the parameters on the outcome, should be carefully determined and followed-up.

Acute renal failure secondary to cancer related urinary tract obstruction

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PP
Acute renal insufficiency due to bilateral ureteric obstruction is relatively uncommon, often associated with cancer, mainly of genitourinary origin. It gives rise to difficulties of treatment, which include endourological methods, but sometimes, unfortunately, haemodialysis treatment is necessary.
Methods and results: 31 cases of postrenal acute renal failure (ARF) due to malignant obstruction, from 2002 to

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2005 were studied retrospectively. 13 male and 18 female with average age 59,7 years. Carcinomas of the cervix and prostate were most frequent malignant disorders besides bladder, colonorectal and breast cancer. In 5 of the patients (16,1%) malignant disorder had not been previously diagnosed. Hemodialysis treatment was necessary in 93,5% of the cases and 6 of the patients (19,3%) continued on chronic hemodialysis.

9 patients (29%) underwent unilateral nephrostomy to reveal renal failure secondary to ureteric obstruction. Renal function improved in 3 patients with spontaneously desobstruction. 4 patients required more complex operative procedure. Mortality was observed in 9 cases (29%).

Conclusions: obstruction should be removed as quickly as possible. The decision of treatment of obstructive anuria in patients with cancer should considered a variety of important aspects, prognosis of basal illness, the complications and mortality associated with the procedure. The most important is prevention of obstructive uropathy in patients with cancer before initiating the oncological/radiotherapy treatment.

Mineral macroelements and microelements in drinking water and renal stones in patients with endemic nephropathy

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PP

Abnormalities silicium-phosphate and sodium-potassium metabolism and secretion are known but are still a subject of controversy in patients with nephrolithiasis. The aim of this study was to try to find out any correlation between intake of minerals from mineral and normal water and their content in renal stones in patients with endemic nephropathy. The region of Lazarevac in Serbia is a region with endemic nephropathy but also the region with mineral waters. Those mineral waters have mineralisation more than 1000 mg/L and more than 2000 mg/L of carbon-dioxide in them. Predominant cations are: Na, Ca, Mg and K, and predominant anion is hydrocarbonate. But there are also some microelements like: Sr, Ba, Li, Rb, Fe, Mn, As and B in the waters. Some of those mineral wells are in normal public use without any medical limitations. In this study we investigated the content of minerals in waters the patients use to drink (mostly mineral waters) and their content in renal stones. After chemical preparations of samples we used analytical methods like: Atomic Apsorption Spectrometry flame and flameless techniques, ICP Optical Emision Spectrometry and Ion Chromatography. The content of sodium in waters from 50 to 1200 mg/L, Calcium from 50 to 200 mg/L, Magnesium from 10 to 80 mg/L and Potassium from 1 to 10 mg/L. The content of Sr was from 0.10 to 1.50 mg/L and Fluorine from 0.20 to 5.0 mg/L and other microelements in hundreds or lower ppb quantities. In renal stones we have found very low content of sodium, and potassium, predominantly it was calcium and some Mg. In Ca renal stones we have found some content of strontium in ppm concentrations. Other elements were in ppb concentrations except fluorine that was some ppm in phosphate stones. In these first investigations we found some correlations between intake of specific mineral waters and forming renal stones and its composition, but the problem was to quantify it because of having poor information on quantity and period of drinking mineral waters.

Evaluation of tubular damage in children with vesicoureteral reflux

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PP

Vesicoureteral reflux (VUR) is a common congenital anomaly of the urinary tract characterized by reflux of infected urine which may cause scarring in susceptible kidneys, with the potential for compromise of renal function.

The aim of the study was to investigate the eventual influence of different grades of VUR on proximal tubule cell damage using urinary enzymes alkaline phosphatase (AP) and γ-glutamyl transpherase (γ-GT) as parameters of tubular damage.

Children with VUR (aged 1-16 years) detected by voiding cystourethrography (VCUG) were investigated. According to a grade of VUR, patients were separated into three groups. The first group included 12 children with VUR grade I-II. The second group was consisted of 12 children with grade III of VUR. Patients with VUR grade IV-V (n: 11) were members of the third group. Control group was consisted of 17 healthy children. AF and γ-GT activities were examined in samples of morning urine specimens using standard biochemical analysis.

The main value of urinary AF activity in third group showed statistically significant increase ($p<0.05$) compared to control values (44.42±30.58 vs.26.44±14.89 U/l).

Urinary γ-GT activity in the third group was 27.70±15.46, which was decrease in comparison to a group of healthy children (41.08±22.27), but not statistically significant. There were no statistically significant changes of AF and γ-GT activities in the first and second group compared to control values.

We discussed increase of AF activity in children with high grade of VUR (the third group) as a consequence of

retrograde urine flow (intrarenal reflux) and consecutive proximal tubule cell damage. On the contrary, decreased γ-GT activity might be caused by some specific inhibitor in urine.

A case with Alström syndrome

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PP

Alström syndrome is a rare autosomal recessive disorder characterized by retinal degeneration, sensorineural hearing loss, obesity, type 2 diabetes mellitus and chronic nephropathy. It may be associated with acanthosis nigricans, hypergonadotropic hypogonadism, hepatic dysfunction, hepatic steatosis, hyperlipidemia, dilated cardiomyopathy, and short stature. We reported a case with Alström syndrome. The patient had hypergonadotropic hypogonadism, hepatic dysfunction, hepatic steatosis; short stature with normal body weight, something that has been infrequently seen with this syndrome. CASE: A 25-year-old man was referred to our hospital because of high plasma glucose level. He is the second of two children of healthy unconsanguineous Turkish parents with unremarkable family history. He suffered from visual defect from birth and developed total blindness 3 years ago. Weight was 55 kg, height was 153 cm, body mass index (BMI) 24 kg/m². Eye examination revealed the absence of light perception and pupil reflection. His testicles size were 4-5 ml. Pubic and axillary hair were little. Examinations of the other systems were normal. Level of fasting plasma glucose (153 mg/dl), postprandial glucose (187 mg/dl), HbA1c (6.4 %), insulin (39.8 mcU/ml), C-peptide (8.68 ng/ml) and the level of HOMA-IR (9.07) were elevated. Serum creatinine level was 2.3 mg/dl (range; 0.5-1.2), alanine aminotrasferase 47 IU/L (range; 0-40), gamma glutamyl transpeptidase 52 IU/L (range; 5-50). Urine analysis showed microalbuminuria (150 mg/24-h). Creatinine clearance was 60 ml/min. Other tests were within normal range. Insulin like growth factor-1 and growth hormone stimulation tests couldn't be performed. Serum levels of FSH (76.7 mIU/ml) and LH (26.1 mIU/ml) were elevated. Thyroid auto-antibodies and viral hepatitis markers were negative. He had a normal male karyotype. Bone age was 18 years. Electrocardiogram and echocardiographic findings were normal. Abdominal ultrasonography revealed grade II hepatic steatosis, and normal size and echo pattern of the kidneys. In scrotal ultrasonography, testicles were small. Ophthalmologic examination revealed bilateral congenital tapetoretinal dystrophy (Figure 1). Renal biopsy was showed diffuse glomerular sclerosis, tubular atrophy, and interstitial fibrosis. We recommended diabetic diet and ordered treatment including cilazapril of 1 mg/day for microalbuminuria. At present, he has euthyroid and normoglisemic status, renal function is stable.

Abdominal ultrasound detection of renal calculosis and the possible complications

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PP

The aim of the investigation was to analyze the renal calculosis, elaborating the dimensions and position of the stones in the urinary tract as well as the complications. The results were matched according to the sex and age of the patients. During the year 2003, 2282 investigations were registered and the results showed an important percentage of renal calculosis (10.1%). In the paper (retrospective study of nephrolithiasis), the females were presented with 63.6%. In the male group the age of 46 years dominated whereas in the female between 19-45 years. The most frequent complications were renal obstructions with 30% and hydronephrosis renal grade I with 56%. In 71% of cases the renal stones were small (less than 5 mm) and in 66.65% were positioned in middle group of the calices renales. 23% of the patent got bilateral calculosis. The abdominal ultrasonography is still the preferred method for examination of the urogenital system, especially the renal calculosis.

Primary and secondary hyeroxalurias diagnosed at the clinical center Skopje

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PP

The current prevalence of hyperoxaluria in Macedonia is not known. Calcium oxalate lithiasis is a cause of considerable morbidity and has a high risk of recurrence. Diagnosis is often delayed and may present with non-specific symptoms and occasionally, urolithiasis or nephrocalcinosis are detected incidentally on ultrasound or abdominal X-ray. Metabolic screening of renal stone formers is essential, but is rarely performed in adults or is limited to urinary calcium, cystin, and uric acid excretion in children, although hyperoxaluria and hypocitraturia contribute to the formation of calcium oxalate stones. Herein we present our experience with five patients diagnosed as primary/secondary hyperoxaluria at the Clinical Center Skopje. Three patients were children and

two were adults. All of them had urinary oxalate/creatinine ratio above the age referent limits. In two children diagnosis of primary hyperoxaluria type 1 was diagnosed on the basis of highly elevated values of urinary oxalate and glycolate. The third child had also PH but the type could not be determined. The adult patients had increased urinary oxalate, but normal values of glycolate. Both adults had inflammatory bowel diseases (IBD) and accompanying hypocitraturia. One female adult had a single kidney with multiple stones. All children had nephrolithiasis and/or nephrocalcinosis and went into chronic renal failure. One child died due to the complications of systemic oxalosis. Both adults had normal renal function but their IBD was poorly controlled. In conclusion: Primary hyperoxaluria in children may have unfavourable course. In adults hyperoxaluria is the complication of IBD. The efforts should be targeted to early diagnosis of primary hyperoxalurias in children and to prevention of secondary hyperoxaluria in adults with proper control of the IBD.

Urinary excretion of α/πGST-se, β-NAG and α-1 microglobulin versus serum levels of the TNF-α and IL-6 in pateints with acute renal failure

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PP

Urinary enzymes, proteins and serum levels of inflammatory markers have been recommended for the detection of changes in the kidney tissue in cases with acute renal failure, acute tubular necrosis and acute rejection episode after renal transplantation. We have analyzed 75 patients (46 males and 29 females, mean age 46.6 +/-19.6 years) with favorable outcome of acute renal failure (ARF:35 patients dialysis dependent/DDP, and 40 patients dialyses independent/DIP/ from different origin α-1 microglobulin, in relation with the urinary excretion of β-NAG), α/pi Glutathion-S- transferase versus β-D-glucozaminidase (β-NAG) in the first day serum concentration of IL-6 (as a "far acting" cytocine) and TNF ten days of hospitalization in the Nephrology Intensive Care Unit. The concentration of GST-se was determined with Biotrin, α-1 microglobulin with DAKO tests, β-NAG-urine-Roshe tests, and IL-6/TNFαtests (ELISA methods, RD Systems, β-NAG mg/L) and α/π GST (155.0+/-30.6; 26.8+/-7.2pg/L). We have concluded that the urinary activity (3.8+/-2.0 U/mmol creatinine) and serum concentration of IL-6 (46.0+/- 8.7pg/L) present maximal values and very strong positive correlation between 2nd and 5th day of polyuric phase of ARF (18DIP). Inversely, the urinary findings have demonstrated α-1 microglobulin and blood presence of TGFα excretion of highest positive correlation and maximal values later, namely between 4th and 7th day (24 DDP; -108.8+/-17.5pg/L). An obvious overlap was present in α-1MG-137.4+/-12.4mg/L; TNFα on days 4th and 5th of polyuric phase and the estimation of the all investigated (α-1MG, αGST-se and β-NAG) parameters (8DIP and 10 DDP). The urinary detection of these markers may be useful and cheaper parameter in differentiation of dialysis requesting from dialysis non-requesting ARF in the recovery phase of the syndrome.

Efficiency of mycophenolate-mofetil in resistant nephrotic syndrome: a case report

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PP

Patients with nephrotic syndrome (NS) in the primary glomerulonephritis are usually treated with standard immunosupressive treatment including steroids and cyclophosphamide. This is a case report of two patients resistant to standard therapy who showed remarkable improvement in their NS when using mycophenolate-mofetil (MMF). The first patient, (male, 54-year old) was admitted to our hospital with a 1-month clinical and laboratory history of NS. He was diagnosed with membranoproliferative glomerulonephritis after renal biopsy. After three months of standard steroid therapy (methylprednisolone 1-2 mg/kg BM) he did not achieve remission. Because of that we continued the treatment with pulse doses of methylprednisolone, followed with cyclophosphamide pulses. During the following two years of therapy patient continued to have frequent relapses. Proven to be steroid and cyclophosphamide resistant he was shifted to MMF therapy (dose of 2g/day). One month after starting therapy patient achieved complete remission with no side effects. The other patient (male, aged 62) was diagnosed with NS (membranous nephropathy) two months before admitting in our hospital. Standard therapeutic procedure included pulse doses of methylprednisolone during one month and then cyclophosphamide per os (2 mg/kg BM) for one year but with no respond in decreasing of proteinuria. In order to achieve remission, Cyclosporin A (2-5 mgs/kg BM) was given. Finally, after one month of no response, we administered mycophenolate-mofetil when patient promptly entered partial remission of nephrotic syndrome. We concluded that MMF was found to be effective and benefitial drug in cases of resistant primary nephrotic syndrome.

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Apparent diffusion coefficient (ADC) values on MRI may be used as an early predictor of myelinosis and can follow the recovery: a case report

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PP

Hyponatremia and its rapid correction may cause osmotic demyelinization syndrome (ODS), whose recovery period was known as variable and even irreversible. We describe a 35-year-old female patient with chronic renal failure who was admitted to the emergency department with profound hyponatremia and corrected rapidly after hemodialysis treatment. On the seventh day during the follow up period she developed quadriparesis and dysarthria. Magnetic resonance imaging (MRI) demonstrated characteristic abnormalities within pontine and extrapontine brain areas with increased signal intensity on T2 and diffusion weighted (DW) MRI and low apparent diffusion coefficient (ADC) values. In the following days after correction of hyponatremia and regular hemodialysis treatment clinical neurological symptoms improved progressively. Serial control MRI investigations revealed the rapid improvement of the ADC values parallel to the clinical recovery in the early course of the treatment. We conclude that monitoring the ADC values on MRI could be used as an early predictor of clinical recovery of ODS. The improvement period of ADC values is shown on the table. ADC values

1st day	1st week	1 mo	4 mo
Pons R/L			
0.662x10-³	0.784x10-³	0.797x10-³	0.809x10-³
0.668x 10-³	0.775x 10-³	0.799x10-³	0.812x10-³
Caudat nuclei R/L			
0.549x 10-³	0.717x10-³	0.752x10-³	0.798x10-³
0.582x 10-³	0.734x10-³	0.749x10-³	0.782x10-³
Putamina R/L			
0.525x 10-³	0.690x 10-³	0.711x10-³	0.719x10-³
0.541x 10-³	0.708x 10-³	0.715x10-³	0.724x10-³

Diabetic patient on maintenance hemodialysis with basal ganglia lesions: a case report

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PP

The involuntary movements typically consist of asterixis and mioclonus are applied to cortical involvement in patients with uremic encephalopathy. Other types of dyskinesias and evidence of basal ganglia pathology have been very rarely reported. We report such case with bilateral basal ganglia lesions. We studied and followed uremic patient with end stage renal disease that developed acute movement disorders. A 46-year-old female for 7 years had insulin dependent diabetes mellitus (DM) type 2. The patient had a history of arterial hypertension for more than 15 years and it had been treated irregularly with medicaments. Uremia was noted in December 1998, and she has been on hemodialysis since January 1999, with basic renal disease of bilateral calculus and calculus pyelonephritis. She was anti HCV positive and last six mounts treated with interferon. After three years of HD treatments she developed movement disorders such as facial grimacing, involuntary legs and hands muscles movements, dyskinesias, consciousness disturbance, dysarthria, dysphagia and ataxia. Neuroimages of CT and MRI, in three times were without findings of acute vascular changes. During last hospitalization besides hemodialysis, the patient was successfully treated with haloperidolum. Laboratory findings (serum glucose, BUN, creatinine, parathyroid hormone levels, calcium), neuroimages (head CT, MRI) showed cortical reductive changes, hyper intensity in basal ganglions (globus pallidus and putamen) and signs of deposition of paramagnetic ions radicals. For nine months the patient was monitored and MRI was repeated. There were partial relapses when therapy was discontinued. The clinical courses, neurological and long-term outcome of this patient have been followed to the present time. Acute extrapyramidal movement disorders have rarely been reported. These types of disorder may occur in uremia and they are with clinical manifestations seriously lowering quality of life and with unpredictable expectations. Hypoperfusion with global brain ischemia and selective vulnerability of the basal ganglia to uremic toxins may account for these lesions.

PP = Poster Presentation; OP = Oral Presentation

Nucracker phenomenon - a rare etiology of non-glomerular hematuria

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PP

Nutcracker phenomenon is a rare cause of non-glomerular hematruria /proteinuria in children. It is a consequence of the entrapment of the left renal vein between aorta and superior mesenteric artery. In this report we present two patients in whom nutcracker phenomenon was demonstrated as a rare cause of non-glomerular hematuria/proteinuria. The first patient was a 13-year boy with recurrent attacks of gross hematuria. A comprehensive work up did not demonstrate any abnormality in his renal function, complement studies, urinary calcium excretion and coagulation profile. During an episode of gross hematuria urine sample was collected and frozen until shipment for analysis. Analysis of urinary proteins with SDS-PAG electrophoresis revealed typical on-glomerular pattern of hematuria. This indicated Doppler study that showed entrapment of the left renal vein. The second patient was a 14-year old boy who was referred for nephrological work up due to chance proteinuria. The stress tolerance test and analysis of urinary proteins with SDS-PAGE indicated orthostatic proteinuria. Doppler study of his kidneys demonstrated nutcracker phenomenon. The both children have had conservative follow up. Their renal function was stable. In conclusion: Analysis of urinary proteins with SDS-PAGE enabled documentation of non-glomerular hematuria/proteinuria in our patients, which indicated further Doppler study and detection of nutcracker phenomenon as a cause of hematuria/proteinuria.

Acute renal failure in terms of acute viral condition as seasonal predisposition

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PP

Infection as an etiological factor in the genesis of acute renal failure (ARF) is often found, but also it is a subject of numerous clinical trials. In our study we emphasize the role of infective syndrome from viral etiology marked by seasonal manifestation, geographically located mainly in the rural settlements. In the period between May-July 2004, four patients were hospitalized in the Department of Internal Medicine at the Medical Center-Tetovo with ARF. The patients were male from 25-55 years of age. Three of them were from rural and one was from urban area. They were characterized with acute development of virosis, whereby signs for bacterial infection were excluded. One of the patients had severe abdominal pain with remarkable meteorism, acute abdomen imposing urgent surgical consultation. Three patients were oligoanuric and one had poliuria. The laboratory analysis resulted with dominant leucocytosis, two of them with high values of hemoglobin and erythrocytes. All of them manifested uremia, hyponatremia, hypocalcaemia and slight increase of IgM, while their urine contained proteinuria, haematuria and granulated cylinders. Ultrasound scan of the kidneys proved signs for ARF. Two of the presented patients because of their persisting oligo-anuria and worsening of the primary condition were sent to the Nephrology Department at the University Clinical Center in Skopje, where they had performed multiple hemodyalisis until regulation of the waste products values in serum. The other two patients were hospitalized for three to four weeks at the Department of Internal Medicine in Tetovo. They all underwent conservative treatment, with complete regression of the clinical and laboratory signs of ARF at the end-point, including long recovery of the kidney's function afterwards. The high percentage of the patients based on the geographical location and distribution, presenting their illness with febrile condition and nephropathy followed by ARF at the start and excluding other possible etiological factors such as renal bacterial infection or other nephrotoxic agents, guide to the notion of viral etiology with possible seasonal predisposition. Characteristic clinical, laboratory examination, pathophysiological presentation impose the notion of viral causes of the illness including the Hantaan group. Due to technical reasons we were not able to confirm the final diagnosis by serological test, which is the unique method for distinguishing from other similar conditions associated with high temperature, lower back pain and ARF.

Retroperitoneal extramedullary plasmatocytoma as a cause of obstructive renal failure in a patient with multiple myeloma

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PP

A 72-year-old male came to the Hematology Clinic in January 2004, with severe back pain and anemia. His past history included bilateral hip arthroplasties ten years earlier. Lab tests revealed anemia, monoclonal spike IgGk, free light chains in the urine and normal renal function. Bone

marrow aspiration and biopsy showed infiltration by monoclonal plasma cells (60%). Karyotype was normal. Skeletal X-ray showed multiple lytic lesions in thoracic and lumbar spine and ribs. The diagnosis of a myeloma stage III was made and he was started on VAD (vincristine, Daxorubicine, Dexomethazone), zolendronic acid and repo. His response was excellent and after 4 cycles he had only a small band on IF on serum. Bone marrow showed only 1-2% plasma cells. He was started on maintenance therapy with zolendronic acid. Six months later (on January 2005) he came to Nephrology Clinic with acute renal failure anemia, positive IF on serum and urine. CT scan of the abdomen revealed retroperitoneal mass expanding to minor pelvis and causing bilateral hydronephrosis. A unilateral nephrostomy was performed but was unsuccessful. Dialysis was instituted. A laparoscopic biopsy of the mass revealed extramedullary plasmatocytoma of monoclonal plasma cells (poorly differentiated). The patient died a few days later because of septicemia. Extramedullary plasmatocytomas are plasma cells tumors that arise outside of the bone marrow. They account for approximately 3% of plasma cells malignancies. They are most located in the head and neck region (80%). So in our case there was a most unusual location of extramedullary plasmatocytoma and of course a rare cause of acute renal failure in a patient with multiple myeloma.

Glomerulonephritis in pregnancy: a case report

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PP

Kidney diseases can worsen during pregnancy, which can influence the pregnancy itself. The prognosis and result of the pregnancy, as well as complications for the mother (preeclampsia, kidney function deterioration) depend primarily on the nature and course of the kidney disease, the extent of damage to kidney function and hypertension. All forms of chronic glomerulonephritis carry with them an increased risk for a planned pregnancy, especially if hypertension is also present. Nephrotic syndrome, if it appears, in most cases leads to the development of preeclampsia. A female sufferer, aged 25, became pregnant 3 years after being diagnosed with chronic glomerulonephritis (diffuse mesangioproliferative glomerulonephritis) which was not treated at the time with differential therapy. In that period she did not see a nephrologist. She was hospitalized in the Nephrology and Clinical Immunology Clinic in the 20th week of pregnancy (first pregnancy) with clinically unambiguous nephrotic syndrome, anaemic, hypertensive with the beginnings of a reduction in kidney function. On admission, corticosteroid therapy was administered, 0.5mg/kg/TT, as well as corrected antihypertensive therapy (increased dose of Alpha-1 agonist) and substitution therapy with iron and folic acid, with strict rest recommended. After three weeks there was no clinical improvement or improvement in the regular laboratory test results and so a re-biopsy of the kidney was carried out. Since the PH result was in line with the existing diagnosis and the patient had stable kidney function, the immunosuppressive therapy was not intensified. Subsequently, the corticosteroid dose was gradually reduced, the antihypertensive therapy diuretics was intensified, human albumen therapy applied and the anaemic syndrome addressed with supplements of iron and folic acid. Throughout her hospitalization she was regularly examined by a gynaecologist. In the 30th week of pregnancy she was transferred to the Gynaecology and Maternity Clinic where the same week there was a worsening of proteinuria, hypertension and kidney function and the gynaecological and nephrological team decided to induce the birth. The delivery was by caesarean section and a healthy female was born, weighing 2200g. From the day of birth, the corticosteroid dose was doubled and ACE inhibitors were introduced into the therapy. The fifth day of the post-partal period, she was transferred to the Nephrology and Clinical Immunology Clinic for further observation and corrective therapy. An improvement in clinical condition and proteinuria (in the subnephrotic range) was confirmed and the same therapy was continued. After examination a month later, because of the persistence of nephrotic syndrome, Cyclosporin 3-5 mg/kg/BW was introduced, along with a gradual decrease in the doses of corticosteroids, antihypertensive therapy and iron and folic acid supplements. The course and result of a pregnancy depend on the nature of the kidney disease and timely delivery reduces the possibility of complications to the mother and child.

Vena cava superior syndrome developing in a dialysis patient with antithrombin-III deficiency following temporary catheterisation

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PP

Despite being widely reported in patients with neoplasms, vena cava superior (VCS) syndrome linked to thrombosis is a major catheter complication that can be encountered during the use of the haemodialysis catheter. Antithrombin-III (AT-III), responsible for a large part of thrombin inactivation capacity in plasma, is the most powerful inhibitor of the thrombosis process. This report describes a

case of VCS syndrome developing 2 weeks following the extraction of the central catheter in a patient transferred from peritoneal dialysis to haemodialysis for 1 week due to leakage by the implantation of a right subclavian catheter following the determination of AT-III deficiency. The patient presented complaining of swelling and pain in the right arm. At Doppler examination total thrombosis was observed in the subclavian and internal jugular vein. At advanced examinations due to lack of response to heparin and clinical worsening VCS and AT-III deficiency were determined. Following thrombolytic therapy with streptokinase, AT-III levels were raised by the administration of plasma, and clinical and radiological stabilisation was established by continuing heparin and continuous oral anticoagulant therapy.

Japanese variant of Dent's disease in a Macedonian patient

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PP

Urinary screening of Japanese children above three years of age has identified renal tubular disorder characterized by low molecular weight proteinuria, hypercalciuria and nephrocalcinosis. This disorder has strong familial predisposition with more severe affection of males and is named Japanese variant of Dent's disease. Herein we present a Macedonian adolescent who fulfilled clinical criteria for Japanese variant of Dent's disease. A young adolescent was found to have significant proteinuria (2+) at a routine urinalysis. He had no family history for renal disease. His height and weight were within age referent limits. He had neither edema nor hypertension. The ultrasound showed normal sized kidneys with normal echogenicity of the parenchyma. The urinalysis showed protein 2+, trace glucose, pH 5, no blood. The acid-base status was normal. He had persistent proteinuria (about 2 g/day). SDS-PAGE analysis of urinary proteins showed tubular pattern of the proteinuria. There was significant hypercalciuria (Ca/Cr 0.89 mmol/mmol, normal <0.56; daily urinary calcium excretion 6.3 mg/kg, normal <4). He had normal renal function and the rest of serum biochemistry was within referent limits. He had normal intelligence and has been attending regular school. The ophtalmological examination revealed normal finding without evidence for cataracts. In conclusion: Our patient presented with low molecular weight proteinuria and hypercalciuria and phenotypically was identical to patients with Japanese variant of Dent's disease. For further clarification molecular genetic study was undertaken.

Hypertension due to renal artery aneurysm

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PP

Renal artery aneurysm (RAA) is a rare clinical entity with an incidence of 0.01-1%. Renal artery aneurysm at all levels of the renal artery to the intraparenchymal branches is rare and usually is associated with hypertension. Here we present a left renal artery aneurysm in a young female patient suffering from severe hypertension. A 16-year-old female patient presented to our clinic with severe headache. She had been diagnosed of having epilepsy for the last one year and she had sustained hypertension for the last six months. Her past medical history was insignificant other than her intra-abdominal operation due to gunshot injury two years before admission. She did not smoke or use any illicit drugs. Physical examination revealed an abdominal significant bruit below the median 15 cm incision scar. Blood pressure was 210/120 mmHg. The examination of the ocular fundus showed grade IV hypertensive retinopathy. Electrocardiography had sinus rythm and limited signs of left ventricular hypertrophy. Laboratory findings were as follow; creatinine 1.2 mg/dl, sodium 136 mEq/L, potassium 4.3 mEq/L, calcium 8.4 mg/dl, renin 245 pg/ml. Echocardiography revealed left ventricular hypertrophy and ejection fraction was 60%. Non-invasive diagnostic procedures were performed since renovascular hypertension was suspected. Computerized tomography angiography showed a distinct aneurysmal dilatation in the proximal left renal artery (approximately 20 mm diameter) and accessory artery aneurysm. Renovascular hypertension due to RAA was diagnosed. All other causes of RAA was disregarded. Therefore, abdominal trauma was detected as the possible cause. She was referred to the vascular surgery unit. Renal artery aneurysm associated with renovascular hypertension due to abdominal trauma is rare. In the literature there are only 16 cases reported. We emphasize the importance of thorough exploration of retroperitoneum following penetrating trauma in order to prevent future sustained renal artery damage.

A rare cause of chronic hypokalaemia: Gitelman's syndrome

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PP

Gitelman's syndrome is an autosomal recessive renal disorder mostly caused by mutations in the gene coding for

thiazide-sensitive sodium chloride cotransporter in the distal convoluted tubule. This syndrome is characterized by hypokalaemia, metabolic alkalosis, hypocalciuria, hypomagnesemia, together with a normal blood pressure. We describe a patient with this syndrome who presented with the complaints of fatigue and muscular weakness and responded well to magnesium and potassium replacement therapy. Also, her sister and brother had similar clinical and biochemical findings. Case report: A 34-year-old woman admitted to the hospital with the complaints of chronic fatigue and muscular weakness provoked by physical exertion especially in the lower extremities and arthralgia bilaterally in knees and ankles. Her physical examination was normal, except mild muscular weakness. Laboratory evaluation showed low serum potassium (2.9 mmol/L; N: 3.5- 5 mmol/L), and magnesium concentrations (0.9 mg/dl; N:1.2-2.1 mg/dl), normal serum calcium concentration (9.6 mg/dl; N: 8.2-10.6mg/dl). Urinary excretion of sodium was 145 (N: 40-200)] mmol/day, potassium 109 (N: 25-125) mmol/day, Calcium 28 (100-300) mg/day, Mg: 3.6 (6-10) mg/day. Serum PTH level was 20.7 (N: 12-75) pg/ml. The arterial blood gas analysis revealed mild metabolic alkalosis. With these findings she was diagnosed as having Gitelman's syndrome. After starting oral magnesium and potassium supplements, her symptoms disappeared, serum and magnesium levels normalized. She has got two sisters and two brothers. One of her sisters (22 year old), an one of her brothers (19 year old) with similar symptoms also have hypomagnesemia and hypokalemia In conclusion, Gitelman's syndrome should be kept in mind as a cause persistent hypokalaemia, especially in the coexistence of hypocalciuria, hypomagnesaemia and mild metabolic alkalosis.

Drug - induced acute tubulointerstitio nephritis: a case report

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PP

Over 40 drugs have been reported to cause acute renal failure due to acute tubulointerstitio nephritis. Antibiotics: cephalosporines, agents of penicillin and sulfonamides have frequent correlation with acute renal failure. It's usually associated with hypersensitivity reaction to drugs. We report a case of a 17-year-old girl, with symptoms of septic temperatures, slight pain in the right flank. She was hospitalized in the regional health center for 9 days. The examinations showed SE= 60/-; serum creatine 140 mmol/l, total proteins 58 g/l, sterile urine and ultrasonographic bigger right kidney. Treatment was: first 4 days with amp. ciprofloxsacin 2 x 100 mg, then changed with amp. Ceftriaxone 2 x 2g, without influence on temperature. On day 10, she came to our clinic. Laboratory findings during hospitalization were: SE= 90/130, Le = 12.2-6.4, anemia, serum creatinine 122-107 mmol/l, urine sediment with Er = 8-10, 24 hours proteinuria 0.82 g/l, anti nuclear factor positive, anti DNA antibody negative, extracellular material positive for lupus. Renal biopsy was performed and histopathological findings of interstitial edema and infiltration of lymphocytes, macrophages, plasma cells and polimorphonuclears conformed with the diagnoses. After withdrawal of all antibiotics, temperature was normalized and renal function was improving. Treatment continued with small doses of corticosteroides.

A rare complication of AV shunt in adult patients: shunt nephritis

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PP

Shunt nephritis is a rarely seen immune-complex-mediated glomerulonephritis. Glomerulonephritis may develop in 0.7-2% of the infected atrioventricular (AV) shunts. It is usually membranoproliferative glomerulonephritis (MPGN). Case: A 35-year-old male was admitted to the nephrology department suffering from severe leg edema. His medical history, an AV shunt was implanted because of an intracranial tumor when he was 9 years old. On physical examination: body temperature: 38.5ºC, blood pressure: 120/80 mmHg, pulse rate: 80 beats/min. Skin, lungs, heart and abdomen were normal. He has ++ pretibial edema. Laboratory investigation showed that Haemoglobin: 12.2 g/dl, White Blood Cell: 7.40X109/l, ESR: 95 mm/h, serum creatinine: 0.9 mg/dl, serum albumin 2.4 g/dl, serum cholesterol 291 mg/dl, LDL 191 mg/dl, triglyceride 240 mg/dl. Microscopic urinary analysis revealed 40-50 erythrocytes and 5-6 leukocytes per high power field. Proteinuria was 14 g/day and creatinine clearance was 108 ml/min. Serum complement level was significantly decreased. Serological investigations were negative for antinuclear antibodies, antineutrophil cytoplasmic antibodies, HBV and HCV Blood cultures grew diphtheroids. The patient treated with intravenous sulbactam-ampicillin during the next 21 days. Renal biopsy was performed that revealed membranoproliferative glomerulonephritis (MPGN).The patient was operated and AV shunt was removed. Culture of the catheter tip was negative. Postoperative first day confusion and 3rd cranial nerve paralysis were developed. Cranial computerized tomography scan was done and there were signs of

hydrocephalus. He was operated urgently and ventriculoperitoneal shunt was implanted. Low dose ACE inhibitor, acetylsalicylic acid and statin therapy was started. After two months, proteinuria decreased from 14 g/day to 7.9 g/day, serum creatinine was the same as before (0.9 mg/dl). Albumin level increased from 2.4 to 3.5 g/dl, haemoglobin increased from12.2 to 14.7 g/dl. On physical examination he had (+) leg edema. Discussion: Shunt nephritis was first described by Black et al. in 1965. Generally it is a childhood disease; the incidence of the disease is very low in adult patients. Patients with shunt nephritis have fever, anemia, hematuria, proteinuria, elevated ESR and decreased C3, C4 levels usually. Nephrotic syndrome may develop in 28-43 % of shunt nephritis. The time between the shunt operation and diagnosis of shunt nephritis was 4 weeks-21 years. This interval was 26 years in our patient and it is realized the longest interval in the literature. Although responsible microorganisms are usually staph. epidermidis and staph. aureus, in our patient showed diphtheroids which is so rare. MPGN is seen in 57-62 % of renal biopsy in patients with shunt nephritis. Our patient has also MPGN. Treatment of shunt nephritis is removal of the infected AV shunt and antibiotic therapy. Generally ventriculoperitoneal shunt was implanted. Prognosis depends on interval from first clinical manifestation to diagnosis of shunt nephritis. If diagnosis delays and it isn't treated effectively, prognosis becomes poor and it may lead to end-stage renal disease or death.

Persistent painless macroscopic hematuria as a diagnostic problem: a case report

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PP

A 41-year-old female patient suffering from continuous, persistent, painless macroscopic haematuria which occurred almost five years ago when the patient felt a sharp pain in her waist and in the left inguinal area. She made laboratory examinations and haematuria was diagnosed. Two weeks prior to the event, she had been routinely examined and the results proved normal. During the mentioned period she was permanently monitored as out-patient and on several occasions she was hospitalized, but all laboratory results (except for the haematuria) were normal, including calciuria, phosphaturia and uricosuria, Lowenstein culture, RRG, echorenography, CT. The retrograde pyelography showed slight extension of the lower calyces on the right kidney. Cystoscopy revealed bleeding in the right urether. She received combined tuberculostatic therapy, but with no effect. She was sent to nephroangiography which showed a cease in the arcuate branch with cortical infarct on the right kidney with arterial and vein communication and pseudohaemangiom which continuously communicates with the upper group of calyces (the same diagnosis was also confirmed pathohistologically after the operation) and after that the nephrologists suggested that further examinations should be stopped in favor of a urological intervention - a partial resection of the upper pole of the right kidney. Nepherctomy was performed. Asymptomatic haematuria with renal function may occur in a great deal of glomerular and nonglomerular cases and it is necessary to examine this syndrome carefully and systematically in order to establish the etiological factor.

Nephropathia medicamentosa chronica: a case report

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PP

The aim of the study was to envisage the harmfulness, i.e. tubular interstitial damages (CRF with uremic occurrences or ARF with papillar necrosis) in patients with abusus of large amounts of analgetics, with clinical outcome often corresponding to phenacetin abuse, which is present in a great number of combined analgetics. Phenacetin completely metabolizes in acetaminophen, whose concentration increases in the renal papillas. A 58-year-old female patient, hyper-emotional, complains on constant headache and joints and muscles pains. She has been taking large doses of prescribed analgetics and she has also combined several types of analgetics. Examinations have shown renal impairment. After ceasing the analgetics use, the renal function improved in the course of two and a half months. It is believed that detriments to the renal tissue occur if a daily dose of 1gr. of phenacetin is taken (or more) over a period of three or more years. According to research made by various authors, the overall amounts which cause renal alteration vary from 3 to 20kg. A group of authors states that on average, the total amount of analgetics which is enough to cause a development of nephropathy is 5kg. for phenacetin, 8kg. for aspirin and 2kg. for caffeine. In conclusion it is always a good idea in tubular intersticial nephropathy, to consider analgesic abuse particularly in neurotic patients and those with rheumatic arthritis.

New approaches in the research of etiology in Balkan endemic nephropathy (BEN)

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PP

The etiology of Balkan Endemic Nephropathy (BEN) has been the subject of much speculation and bacteria, viruses,

mycotoxins, inorganic elements, organic compounds, and plant toxins have been suggested as possible etiological factors. Evidence for an inherited metabolic susceptibility to BEN and participation of hereditary disorders has also been cited. The search for lipid abnormalities in BEN has roused sporadic interest and has not been fully elucidated.
This study was performed in 54 healthy subjects from the families affected with BEN (Group A), 18 members from non-affected families living in the same location (Group B), and 25 control subjects (group C). Lipid profiles and Lecithin: Cholesterol Aciltransferase (LCAT) activities were determined in each subject. The most striking distinction between the groups was that of the LCAT activity, which was abnormally low in group A subjects (39±2), significantly different (P<0.0001) from that of the other groups. Thirty individuals from group A were those accounting for the low LCAT activity (Group A1). This group had a significantly lower total cholesterol and free cholesterol (Fc) than all the other subjects. The entire group A subjects had a significantly lower percentage of Fc than the other two groups. There were no significant differences in HDL cholesterol between any of the groups, but group A1 had significantly higher HDL than group C (P<0.04). What emerges from our study is that a certain proportion of subjects from BEN families have a peculiar form of lipid abnormalities associated with an abnormal LCAT activity. At present we have no explanation for these findings. We believe that these changes may have an important role in the pathogenesis of BEN either as a trigger event or in collaboration with other event(s).

Efficacy of cyclosporine or azatioprine in patients with idiopathic membranous nephropathy and persistent disease activity

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PP

A single course of immunosuppressive therapy improves outcome in patients (pts) with idiopathic membranous nephropathy (IMN). However, not all pts respond and relapses occure in about 30% of pts. We have prospectively studied the clinical course in 23 pts who have not responded to initial immunosuppressive therapy, and who randomly assign to receive cyclosporine (10 pts, 9 male, 1 female; age: 39.2 ± 13.1 years; Group 1) or azatioprine (13 pts; 8 male, 5 female; age: 47.5 ± 8.2 years; Group 2) both in combination with low doses of prednisolone. The follow-up period was 2 years. All pts had nephrotic syndrome (NS) with average proteinuria 11.6 ± 4.7 g/day for group 1, and 7.0 ± 2.7 g/day for group 2. One pts in group 1 and 4 pts in group 2 had renal insufficiency. The interval between the firs and second course of immunosuppressive therapy was 12-24 months. Mean pretreatment proteinuria have significantly fallen to 3.9 ± 5.2 g/day in group 1, and 1.5 ± 1.4 g/day in group 2. Status at the end of follow-up in the examined groups was complete remission (4 vs 4), partial remission (1 vs 8), persistent NS (5 vs 1). However, mean serum creatinine raised in both groups, but it was significant only in group 2 (120.5 ± 46.5 μmol/L vs. 206.5 ± 180.3 μmol/L; p= 0.03; Wilcox's test). At the end of follow-up, no one pts has started haemodialysis treatment. Our results indicate that pts with IMN who do not respond after a first course of immunosuppressive therapy should be offered to cyclosporine or azatioprine wich both induced significant diminish of proteinuria and stabilize renal function in this high risk group of pts with IMN.

The implementation of clinical practice guidelines (DOQI): reality or wish?

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OP

Nowadays, that medicine is considered to be based-evidence, the implementation of clinical practice guidelines is of fundamental significance. The aim of this study was to assess the implementation of the DOQI in our nephrology department. The study involved 104 dialysis patients (61 males, mean age 65,8±12,7 years, 72 HD patients and 32 PD patients, 39 diabetics, mean duration on dialysis 65,1±58,4 months) in whom we assessed the implementation of clinical practice guidelines for anemia, dyslipidemia, hypertension and secondary hyperparathyroidism. The assessment was based on clinical, hematology and biochemistry screening on two consecutive months. Control of anemia considered to be satisfactory, as the target value of Hb ≥11,0 gr/dl was achieved in 77 patients (74%). In 60 patients serum LDL was within the defined therapeutic limits (LDL≤ 100mg/dl or non-HDL≤ 130 mg/dl) (58%). Hypertensives (BP≥ 140/90 mmHg and/or use of antihypertensive agents) were 75 out of 104 patients (72%). From the 72 HD patients, 54 (72%) were hypertensives and from the 32 PD patients the hypertensives were 21 (66%). From the subgroup of diabetics (n=39) hypertension was observed in 29 (74%), while in non-diabetics (n=65) hypertension was found in 46 (70%). 68 of the 75 hypertensive patients were receiving antihypertensive agents. Control of hypertension was achieved in 17 of the 75 patients (23%) and all of them were non-diabetics. The management of secondary hyperparathyroidism in clinical practice proved to be the most difficult. Serum calcium (Ca)

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was within the target limits (8,4mg/dl ≤ Ca ≤ 9,5mg/dl) in 51 patients (49%), phosphate (P) (3,5mg/dl ≤ P ≤ 5,5mg/dl) in 52 patients (50%) and the CaXP product was below 55 mg²/dl² in 76 patients (73%). Normal values of iPTH between 150-300pg/ml were found in 28 patients (27%). It is worth noticing that control of renal osteodystrophy, including all four parameters, as it is defined from the DOQI, was achieved only in 9 patients (9%). Moreover, only 3 of the 104 patients (3%) proved to have overall compliance and control for anemia, dyslipidemia, hypertension and secondary hyperparathyroidism. In conclusion, it seems that the implementation of clinical practice guidelines was satisfactory enough only regarding anemia. The patients were undertreated regarding dyslipidemia, hypertension and secondary hyperparathyroidism. It becomes imperative the need for a widespread acceptance and a more effective implementation of the DOQI in clinical practice.

Oxidative stress evaluation in uremic patients undergoing continuous ambulatory peritoneal dialysis

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OP

Oxidative stress - primarily due to the uremic state per se, but also to certain aspects of dialysis procedure - has been documented in chronic renal failure (CRF) patients. Considering that the great bulk of evidences came from hemodialysis patients and only scant data is available concerning peritoneal dialysis, we aimed to evaluate the oxidative status in CRF patients on continuous ambulatory peritoneal dialysis (CAPD). Plasma lipid peroxidation was assayed as thiobarbituric acid reactive substances (TBARS; nmol/g protein) and plasma total free thiols (Pt-SH; mcmol/g protein) was used as marker of extracellular antioxidant status. The enzymatic and non-enzymatic intracellular antioxidant defence was assessed from measuring erythrocyte superoxide dismutase (SOD; U/g haemoglobin), glutathione peroxidase (EGPx; U/g haemoglobin) and non-protein thiols (E-SH; mcmol/g haemoglobin). All the oxidative stress parameters were determined by spectrophotometry in 18 CAPD patients, compared with 16 non-dialysed CRF patients (mean serum creatinine 4.5+2.7mg/dl) and 12 healthy subjects. TBARS levels were enhanced only in CAPD patients versus controls (58.3+19.8 vs. 42.7+12.4, p= 0.01). These patients, also, had markedly lower activity of erythrocyte SOD as compared to the other studied groups (164.2+47.5 vs. 464.7+63.9 in CRF group, p<0.001 and 409.8+58.8 in controls, p<0.001, respectively). As concerns the glutathione-dependent antioxidants, a significant decrease of plasma thiols was noticed in both uremic groups (6.3+0.9 in CAPD group, p=0.03 and 6.1+0.9 in CRF group, p=0.02 vs. 7.2+1.1), while the EGPx and E-SH showed gradually elevated values in patients, with the bigger increment in CAPD group (for EGPx: 3.3+0.9 in controls, 4.5+1.3 in CRF group, p=0.01, and, 7.9+0.9 in CAPD group, p<0.001 versus both CRF and controls, respectively; for E-SH: 3.2+0.9 in controls, 4.8+2.5 in CRF group, p= 0.04, and 11.8+1.8 in CAPD group, p<0.001 versus both CRF and controls). We concluded that peritoneal dialysis patients are exposed to oxidative stress, evidenced by both an increase in plasma lipid peroxidation (TBARS) and a suppressed activity of antioxidants (erythrocyte SOD). Also, extracellular antioxidant system appears to be impaired since lower levels of free thiols were found, probably accounted by the enhanced consumption in order to counteract the oxidative burden. The enhancement of erythrocyte glutathione-dependent antioxidants might reflect rather an adaptive response to oxidative processes and, therefore, indirectly argues in favour of oxidative stress occurring before initiation of dialysis and augmented thereafter.

Vascular calcifications in patients on hemodialysis

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OP

Vascular calcifications (VC) in ESRD patients are strongly associated with cardiovascular morbidity and mortality. There are two different types of VC: arterial media calcifications (AMC), a non occlusive condition, related to a mineral metabolism disturbances, and atherosclerosis with intima calcifications (AIC) of atherosclerotic plaques. The aim of this study was to evaluate arterial and intima calcifications by plain radiography and B-mode ultrasonography in HD patients, and to analyze potential risk factors on their appearance. Study included 73 HD patients (33M, 40F), mean ages 54, 30±8,52 years, and HD duration of 115,56±60,32 months. AMC were detected by plain radiography of pelvis, hands and region of vascular access. AIC were detected by B-mode ultrasonography of common carotid arteries. The influence of potential risk factors (age, gender, HD duration, diabetes, plasma calcium, phosphorous, PTH and albumins), on appearance of overall AMC, AMC in different regions and AIC also analyzed. AMC were detected in 41(56,2%) patients - in pelvis 26(35,3%), hands 7(9,6%), and in region of vascular access 28(38,4%). Significant positive linear correlation were

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found between AMC and male gender (p<0,01), HD duration (p<0,01) and diabetes (p<0,05). Negative linear correlation was found between AMC and age (p= ns). Prevalence of AMC in the region of vascular access significantly correlated with diabetes (p<0,05), age (p<0,05) and HD duration (p<0,001). Prevalence of AMC in the region of hands significantly correlated with diabetes (p<0,05), and phosphorous(p<0,05). There were no significant correlations between AMC and risk factors in the region of pelvis. Calcified plaques on carotid arteries were detected in 57 (76,1%) patients. Significant positive linear correlation was found only between AIC and ages (p<0,01). In conclusion, atherosclerosis with intima calcifications are more frequent then arterial media calcifications in HD patients. AIC was usually observed in older patients and AMC was close associated with male gender, diabetes and HD duration. Prevalence of AMC in the region of vascular access is higher in older patients with diabetes and longer HD duration. Prevalence of AMC in the region of hands is higher in patients with diabetes and higher phosphorous concentration.

Low-dose intravenous iron: effective adjuvant to epoetin in hemodialysis patients

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OP

Most HD patients need regular intravenous (i.v.) iron supplementation to achieve adequate response to epoetin (Epo). A 100 mg i.v. post-dialysis dose is most often used. At this dose, the surplus of iron immediately after application might become sequestered in body stores. Excessive iron supplementation might also cause increased oxidative stress, acute toxic effects and increased susceptibility to infection. Therefore lower iron dosing might be preferable. We explored the effectiveness of 25 mg post-HD iron sucrose in comparison to 100 mg dose previously used. Dosing interval was assessed by the degree of anemia correction and by epoetin requirements. Fifty-two stable chronic HD patients were included in the study. All of them were continuously receiving i.v. iron substitution and Epo. We compared the effect of frequent (on average 1-3/week) low-dose (25 mg) post-dialysis i.v. iron regime (6-month's Period 2) to less frequent (on average 1-2/month) 100 mg regime (6-month's Period 1) on Hb concentration and the required Epo dose. Iron and Epo dosing was individually scheduled every third week according to lab follow-up. Target Hb 120 g/l was achieved and maintained in 33 patients (63%) in Period 1 and in 44 patients (85%) in Period 2. Despite lower iron dose and epoetin dose we achieved better anemia correction with significantly higher Hb concentrations in the second period. Erythropoietic indices were stable and in the reference range except serum ferritin levels which tend to rise. Results are shown on Table 1 and Table 2. We conclude that in our patients anemia was better corrected in the period of frequent low-dose intravenous iron supplementation. This occurred despite substantially lower single and cummulative iron dose. At the same time we observed a decrease in Epo requirements. Frequent low dose i.v. iron regime thus provides adequate iron supply at lower cumulative iron burden. Increased frequency of iron application might even contribute to a better Epo response. Also, low individual iron dose might help to avoid possible acute toxic effects (Table 1). Mean values of Hb and iron metabolic indices at start, at the point of the introduction of low-dose iron and at the end of the study.

Hb %	Hypo	Ret Hb	Ferritin	T-SAT
Start	120,1	2,1	35,1	581	25,0
	121,3	1,6	35,1	534	24,0
	7,6	1,8	1,8	210	7,1
Midpoint	121,9	2,0	35,2	653	28,1
	123,0	1,2	35,5	532	26,6
	10,1	2,0	2,1	309	12,0
End	127,9	2,6	35,3	769	26,9
	130,0	1,4	35,5	765	26,0
	10,7	3,2	1,9	191	9,0

Legend: %Hypo = % of hypochromic erythrocytes, Ret% = % of reticulocytes, Ret Hb = reticulocyte Hb content, T-SAT=transferrin saturation Values in the individual rows indicate average, median or standard deviation Table 2. Average intravenous iron saccharate and epoetin dose in the first and second period Fe++/month (mg) Epo dose (I.U./week) Period 1 227 (+190) 7058 (+4081) Period 2 130 (+80) 6009 (+4155) t-test (p) < 0,001 0,201 (NS).

Tunneled femoral dialysis catheter: a new permanent vascullar access

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OP

The tunneled femoral catheter is our original permanent vascular access for hemodialysis that was used for the first time in the beginning of 1992. We puncture the femoral vein in the inguinal area (Seldinger technique), insert the cuff catheter through "peel-away" introducer sheath, and subcutaneously tunnel in the abdominal wall (variation 1) or the thigh (variation 2). By the end of 2004 we have inserted 276 tunnelled femoral catheters or 9.78% of all permanent vascular accesses. Most of them were double-lumen catheters, and less than 5% were single lumen cuff catheters. All the catheters were implanted with local anesthesia, and 30% were treated ambulatory without patients' hospitalization. From December 1999 till December 2002, 103 tunneled femoral catheters (TFC) were inserted in 77 patients that remained in situ for cumulative total of 9899 days. Duration time of catheters was 5-542

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days, average 139 days. The catheters were removed when a permanent vascular access was provided or when a major complication has occurred such as malfunction and clinical sepsis. Each patient with symptoms suggesting infection was considered to have possible bacteriemia, therefore we took blood cultures from the catheter (BCC) and peripheral vein (BCP) and subsequently started with systemic antibiotic therapy. We have instilled concentrated antibiotic solution into the catheter lumen (the antibiotic was "locked"). During the follow-up period, 21 catheters have had 41 episodes of infection, effectively treated with antibiotics. Only 6 catheters (5.8%) were removed because of suspected catheter-related bacteriemia, and for five of them we have confirmation from the microbiological culture of the catheter tip. The infective rate was 4.1 episodes per 1000 catheter days. The most common isolated microorganisms were: Staphylococcus coagulasa negative, Staphylococcus aureus and Enterococcus. 30 catheters (29%) were removed due to malfunction (poor flow). In our long-term experience the tunneled femoral catheter has proved to be safe permanent vascular access with slight complications. The tunneled femoral catheters are usually blamed for frequent infection rate but our practice has shown that this is not the case.

Control of phosphate levels in haemodialysis patients: why is it so difficult?

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OP

Phosphate retention has the major role in the pathogenesis of secondary hyperparathyroidism and moreover, it is a strong independent predictor of survival of haemodialysis patients. Therfore, prevention and treatment of hyperphosphatemia has the paramount role in haemodailysis patients. The aim of this study was to evaluate the patients compliance in treatment of hyperphosphatemia and to assess the fraction of patients reaching the targets of K/DOQI guidelines. The most recent values of total calcium, phosphate, alkaline phosphatase and parathyroid hormone (PTH) levels were recorded in 285 patients, mean age 61.7 ± 12.6 years, on haemodialysis 4.7 ± 4.3 years. All patients were dialysed 3 times 4 hours per week in three dialysis units, bicarbonate dialysate with calcium concentration 1.5 mmol/l was used in all patients. Low flux dialysers were used in majority of patients. All patients were interviewed by one of the authors, regarding when and how many of phosphate binders are used and how many other drugs, i.e. number of pills are used. The mean Ca level was 2.2 ± 0.25 mmol/l; 45 of 285 (5.7%) had Ca level highethan 2.4 mmol/l, mean P level was 1.74 + 0.52 and 118 of 285 (41.2%) patients had P level higher than 1.8 mmol/l, Ca x P product was 3.84 + 1.19 mmol2/l2, but 83 of patients (23%) had Ca x P product higher than 4.4 mmol2/l2. The mean PTH level was 33.8 ± 29.4 pmol/l, in 84 of 218 patients (38.5%) the level of PTH was higher of 31.4 pmol/l. The mean number of all pills taken by our patients was 7 per day (range 1 to 19). 33 of them (11.5%) did not take any phophate binder. All others used calcium carbonate as phosphate binder (only sporadically sevelamer hydrochloride was used), mean 3.4 g (range 1 to 12 g). 78 of patients (31%) take phospahte binders only with main meals (dinner or lunch), 28 patients (115) take them between meals and 11 (4.3%) after melas. All the others take phosphate binders just before or during all meals. During a week, 46 patients (18.2%) missed once or twice to take a phophate binder, and 22 (8.7%) more than twice missed taking phosphate binnders. A large group of patients (up to 41%) did not reach the targets of K/DOQI gidelines. Poor compliance of our patients is very important. Large number of pills (up to 19) could be one of the reasons, but poor education regarding therapeutic regimens is also important. Even the new phosphate binders will not help in prevention of hyperphosphatemia without better compliance of patients. Therefore, greater effort of nephrologist and the whole dialysis medical staff in dialysis patients' education could be of gerat value.

Appearance of psychopathological tendencies in the early phase of haemodialysis treated patients

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OP

Chronic renal disease causes not only organ disturbances in haemodialysis (HD) patients but also psychological changes. They are evident in emotional, cognitive and social sphere of personality. Newly diagnosed HD patients experience different psychological problems such as: anxiety, depression, phobic reactions, dialysis neurosis and psychosis, etc. Numerous studies have shown that appearance of psychopathological tendencies is more obvious in the beginning of the treatment; later, patients are being adapted to dialysis treatment, which reduces reactive depression and other psychopathological tendencies. Analyzing the differences in individual reactions, in our study we assessed personality profiles and appearance of psychopathological tendencies in ESRD patients in the early phase of HD (first 90 days after HD initiation). Thirty-one patient (11M, 20F), aged from 21-65 years (median 44,9),

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all in the early phase of the HD were psychologically examined by explorative interview; the questionnaire composed of items relevant demographic data and Minnesota Multiphasic Personality Inventory- 202 (MMPI-2). Obtained data have indicated that in the early phase of HD treatment, psychological status in patients with ESRD is changed. Scores gained by scales of hypochondria, depression, hysteria, anxiety, paranoia and social introversion were higher than the average of the general population. We identified depression and anxiety as primary complications associated with HD initiation. We have also found positive correlation between these two scales in our patients (r=0,81, p<0,01). Normal personality profile with presence of mild levels of anxiety and depression (T scores < 60) was found in 19,3% of patients. This profile was positively correlated with pre-dialysis clinic attendance. Neurotic personality profile was found in 74,2% of patients. Most of them started HD when their health was already very seriously damaged and were poorly informed about HD treatment. Deep depression (T score >85) with suicidal ideas was evident in two patients. Psychotic personal profile was found in two patients (6,5%). We conclude that pre-dialysis clinic attendance favorably influences patient's emotional status after HD initiation. The study has indicated that psychotherapeutic intervention is necessary for most of the early phase HD patients. The psychological changes require psychological preparation as well as education and psychological counseling.

Sleep apnea in a group of patients dialyzed over more than 10 year-preliminary results

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OP

The prevalence of sleep problems (insomnia, restless leg syndrome, periodic limb movement and sleep apnea) has been shown to be high in patients with end-stage renal disease (ESRD) and might contribute to impaired quality of life and to increased cardiovascular risk in this population. Methods: We investigated a group of 17 patients (10 males, mean age 49 years) with ESRD, dialyzed for more than 10 years. They completed the Epworth Sleepiness Scale questionnaire and were investigated by overnight polisomnography which included 4 electroencephalographic channels, 2 electrooculographic channels, 1 electromyographic channel, oronasal air flow, arterial oxygen saturation, respiratory movements and patient body position recording. Results: All patients had disturbed sleep with frequent awakening and efficacy of sleep under 50% with only superficial sleep stages on EEG. Eight (47%) patients showed evidence of sleep related breathing disorders with an apnea-hypopnea index (AHI) more than 10/hour and met the diagnosis criteria of obstructive sleep apnea syndrome (OSAS). In this subgroup, the median apnea/hypopnea index was 17,7/h (range 10-58/h), the median hypopnea index 12/h, the median desaturation index 25/h, the median oxygen saturation during the night 94% and the minimum oxigen saturation 90%. There was no difference between subgroups regarding age, body mass index, biochemical markers. Conclusion: The prevalence of sleep apnea in this group of patients undergoing dialysis more than 10 years is considerably higher than in general population and it is similar to previous studies reports in literature. These might be the result of the prolonged uremic millieu in this long survival group of ESRD patients.

The influence of inflammation markers on anemia and erythro-poietin responsiveness in hemodi-alysis patients in a dialysis unit from Romania

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OP

A poor response to recombinant human erythropoietin (rHuEPO) is encountered in up to 15% of hemodialysis patients, even after iron deficiency, blood loss, vitamin deficiency, aluminum toxicity and underdialysis are excluded. Less attention has been accorded to inflammation and malnutrition. The aim of this study is to examine the relationship between anemia, EPO dose and inflammation-malnutrition in hemodialysis patients. Data from 34 hemodialysis patients (mean age 54.5±1.9 years) were analyzed. Patients with iron deficiency, secondary hyperparathyroidism, blood loss, neoplasia and acute infections were excluded. C-reactive protein (CRP) levels were measured as a marker of inflammation. EPO dose (U/kg/week) and EPO responsiveness index (EPO/week/hematocrit) were calculated. Serum creatinine and body mass index (BMI) were considered as nutritional markers. Hemoglobin, hematocrit, serum ferritine were measured. Mean hemoglobin was 10.3±0.2 g/dl, mean EPO dose was 82.8±7.1 U/kg/week and mean Kt/V was 1.5±0.5. Patients were divided in two groups: group A (CRP<1 mg/l), and group B (CRP>1 mg/l). Hemoglobin was higher in patients from group A than in group B (11.1±0.5 vs. 10.1±0.2 g/dl, p=0.067, NS); however administered EPO dose (56.3+18.6 vs. 93.8+7.2 U/kg/wk, p<0.05) as well as EPO responsiveness index (103.4+30.7 vs. 207.1+16.1, p=0.0041) were significantly lower in group A compared to

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group B. Patients with hemoglobin<11 g/dl had higher levels of CRP (9.8+1.6 vs. 2.0+0.9 mg/l, p=0.00314), received higher EPO dose (100.7+8.2 vs. 47.1+6.7 U/kg/wk, p=0.0004) and had worse EPO response expressed by higher EPO responsiveness index (222.3+16.1 vs. 87.6+12.8, p<0.05) compared to patients with hemoglobin>11 g/dl. CRP levels displayed an inverse correlation with hemoglobin (R 0.421, p=0.0132), a positive correlation with administered EPO dose (R 0.573, p=0.0005), and EPO responsiveness index (R 0.638, p<0.0001). The level of serum creatinine as a nutrition marker inversely correlated with CRP (R 0.534, p=0.001) as well as EPO dose (R 0.496, p=0.003) and EPO responsiveness index (R 0.356, p=0.038). No correlations with age, gender, BMI, dose of dialysis or type of membrane were present. Evolution of hemoglobin at 3 and 6 months was strongly predicted by baseline CRP value. Patients with CRP<1 mg/l (group A) displayed an increase in hemoglobin: 11.9+0.6 g/dl at 3 mo (p=0.016 vs. group B) and 12.1+0.4 g/dl at 6 mo (p=0.0036 vs. group B); this allowed EPO dose to be decreased to 44.3+18.6 U/kg/wk at 3 mo and 42.9+21.6 U/kg/wk at 6 mo (NS), while patients with CRP>1 mg/l maintained a stable hemoglobin: 10.2+0.3 g/dl at 3 mo and 9.9+0.4 g/dl under similar EPO dose. In conclusion, there is a strong correlation between anemia and inflammation and malnutrition markers in hemodialysis patients and CRP is a strong predictive factor of EPO responsiveness.

Effects of atorvastatin on aortic pulse wave velocity in hemodialysis patients: a preliminary study

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OP

Hypolipidemic drugs are known to prevent development of arterial stiffness in hemodialysis patients with hypercholesterolemia and/or type 2 diabetes mellitus. Arterial wall stiffness, assessed by measuring pulse wave velocity (PWV), may predict all cause mortality in patients with ESRD. Adaptations of PWV to "handgrip" and thus to the stimulation of autonomous nervous system have been reported in a previous study of our teamwork, where ESRD patients were found either to keep the ability to respond to handgrip augmenting PWV or to decrease PWV after handgrip because of loss of aortic distensibility. Our initial hypothesis was that the latter group could get some benefit from hypolipidemic treatment. In the present study we selected 20 stable dialysis patients who did not respond to the stimulation of SNS in the basal study. Ten of them were scheduled to receive 10 mg per day of atorvastatin for 6 months, while the other 10 were used as controls. PWV was determined from carotid and femoral arterial pulses recorded simultaneously with ECG before and during handgrip test, in two occasions, at the beginning and at the end of follow up. Patients were lying down throughout the study. Results were correlated to age, mean blood pressure, lipid profile, and coronary disease. KT/V was kept >1.2 and dialysis conditions were kept stable. Results: Two patients of the intervention group had to stop atorvastatin because of elevation of transaminases. Elevated mean values of PWV were found in our sample (mv11.7±3.8 m/sec). Significant increases in systolic, diastolic blood pressure, mean blood pressure were noted after the handgrip (p<0.001). Pwv remained unchanged at the basal study in the entity of the patients. Six months later PWV still remained unchanged (11.45±3m/sec). However, patients in atorvastatin group responded positively to handgrip, augmenting substantially PWV (12.94±3.1, p<0.05). This was not observed in control group. Results did not correlate to age, initial blood pressure or lipid profile. Conclusions: We have shown that patients with former identified unresponsiveness to "handgrip", restored the ability of their vessels to react to SNS stimulants after 6 months of atorvastatin treatment. In spite the limited number of patients in this preliminary study, our results imply that atorvastatin could be beneficial for restoration of aortic stiffness.

Prealbumin and inflammatory markers in dialysis patients

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OP

The aim of this study was to measure serum prealbumin in haemodialysis (HD) and peritoneal dialysis (PD) patients and determine whether there is an association between prealbumin and other biochemical markers [albumin, interleukin-6 (IL-6), C-Reactive protein (CRP), transferrin, ferritin] and anthropometric markers [body mass index (BMI) and % body fat derived from skinfold thickness measurements]. The above variables were compared with the outcome goals for dialysis patients based on Kidney Disease Outcome Quality Initiative (K/DOQI) and inflammatory markers (IL-6, CRP, ferritin, and transferrin) were compared with the laboratory normal values in order to examine the prevalence of inflammation and malnutrition in the two groups of patients. The study was performed at the Dialysis Unit of “Laikon” General Hospital of Athens

(Greece). Only clinically stable patients were included in this study where patients with acute and potentially reversible renal failure were excluded. The statistical programme SPSS for Windows was used for data analysis. Particularly, the T-test, the one-way ANOVA test and the Pearson correlation test were performed to reveal the correlations between the investigated variables. Fifteen HD patients 50.7±17.9 years of age, 65.7±9.0 kg of dry weight and fifteen PD patients 63.6±16.6 years of age, 71.4±13.3kg of dry weight, were recruited from the hospital. There were no significant differences in age, duration of dialysis, dry weight and BMI between the patients on HD or PD, but there was a large variation in the duration of dialysis in both groups of patients (70.3±74.2 and 32.9±27.3 for HD and PD group respectively). Prealbumin levels were not significantly different between patients on HD or PD, but there was a definite trend towards significance (336.1±113.6 and 273.3±144.0mg/ml, P=0.0527 for HD and PD group respectively). Albumin and transferrin were significantly different between the groups (t-test; P<0.05) but duration of dialysis did not seem to influence significantly. Moreover, the Pearson correlation test revealed that prealbumin was negatively correlated with ferritin in the HD group (r=-0.67, P=00.7) but not in the PD group. Furthermore, albumin was negatively correlated with CRP in the HD group (r=-0.65, P=0.09) but not in the PD group. In the PD group, albumin was positive correlated with IL-6 (r=0.61, P=0.029). Frequencies analysis showed that 80% of PD patients and 73.3% of HD patients had inflammation and malnutrition. In conclusion, in our study, serum prealbumin levels were lower in the PD group compared with the HD group but it was not significantly correlated with any of the investigated parameters, apart from ferritin, in the HD group.

Adynamic bone disease - clinical outcome of the treatment with different dialysate calcium concentration

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OP

Patients with adynamic bone disease (ABD) show a reduced ability to handle an exogenous calcium load implying a higher risk of extra-osseous calcifications. Hence, a suitable dialysate calcium concentration is important and must take into consideration the medical therapy and the calcium balance on an individual patient basis.

The aim of the study was to compare the effects of low (Ld) and high dialysate (Hd) calcium concentration on the evolution of adynamic bone disease in dialysis patients.

In this open-label study, 52 ABD presumed patients on maintenance bicarbonate haemodialysis were included. The key inclusion criteria was concentration of parathyroid hormone (PTH)<100 pg/ml and bone alkaline phosphatase (BAP)<37 U/L. An equal number of patients were randomized to Ld (1.25 mM) and Hd (1.75 mM) calcium concentration. The only phosphate binder to be used was calcium carbonate. The duration of the study was 6 months. Adverse events were monitored throughout the study and 3 (Hd) patients were discontinued from the study upon investigator's decision. Blood samples were taken at the enrollment and at 3 months interval for determination of a series of serum parameters relevant to bone using the appropriate kits and methodologies. Total and ionized calcium were measured monthly in serum before and after dialysis.

The groups didn't differ in the mean serum total calcium (tCa) before dialysis, but it was significantly increased in Hd group after the dialysis (2.59+/-0.18 vs 2.44+/-0.19; p<0.01). Mean tCa in Ld group didn't change during dialysis, while it was markedly increased after dialysis in Hd group (2.59+/-0.18 vs 2.41+/-0.21; p<0.01). When compared with Hd group, patients in Ld group had significantly lower mean ionised serum calcium (iCa) before (1.08+/-0.02 vs 1.04+/-0.02; p=0.02) and after dialysis (1.16+/-0.10 vs 1.09+/-0.10; p<0.01), respectively. A significant increase in mean postdialysis iCa was observed in Hd group (1.09+/-0.10 vs 1.16+/-0.10; p<0.01) while no modification was observed in Ld group. There was no difference in predialysis phosphate levels and the average dose of calcium carbonate during the study. Mean serum levels of iPTH, bone and total alkaline phosphatase in Ld group were significantly increased at the end of the study compared with the baseline levels [(65.13+/-55.74 vs 38.63+/-22.96; p<0.05); (35.35+/-22.46 vs 23.38+/-7.26; p=0.01); (85.24+/-38.14 vs 59.46+/-18.69; p<0.01)], respectively. The most common side effects of the treatment with dialysate Ca of 1.25 were hypotension and cramps in 16% and 17% of the dialysis sessions, respectively.

In conclusion, there was an evolution towards higher bone turnover in patients treated with dialysate calcium of 1.25 mM, probably by inducing a negative calcium balance and causing repetitive stimulation of PTH secretion in each dialysis. Hence, this might be considered a valuable treatment for ABD patients, although this rather beneficial and not harmful effect should be confirmed in a long-term evaluation.

The use of a non-calcium containing phosphate binding

agent in maintenance dialysis patients

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OP

With the use of calcium-based phosphate binders, hypercalcemia is especially problematic when calcitriol is administered in an attempt to modulate parathyroid hormone (PTH) levels. Lanthanum carbonate was developed as non-calcium phosphate-binding agent. This investigation compares the efficacy and safety of lanthanum carbonate and calcium carbonate. It was an open label, randomized, compare-controlled, parallel group study. Twenty-two patients with end-stage renal disease, initiated onto hemodialysis within 12 weeks of recruitment to the study, met the study criteria and were randomized to start on either lanthanum carbonate (10 patients) or calcium carbonate (12 patients). Lanthanum carbonate tablets containing 250 mg lanthanum were taken immediately after meal, while calcium carbonate tablets containing 500 mg calcium were taken immediately before meal. The initial study medication dose was determined by the degree of phosphatemia. The treatment was conducted for 48 weeks. Titration visits were every 2 weeks for 8-week period, and then monthly until week 48. Blood samples were taken predialysis at each study visit to assess biochemical, hematological and bone marker parameters. We evaluated 22 patients, 12 male (6 in the lanthanum group) and 10 female (4 in the lanthanum group), aged 55 ± 10 years for the lanthanum and 57 ± 10 years for the calcium group. Patients received 12 hours of hemodialysis treatment per week, using bicarbonate dialysate with calcium concentration of 1.75 mmol/L, and low-flux polysulfone membrane of 1.3 m2. KT/V was 1.14 + 0.27 for the lanthanum and 1.1 + 0.11 for the calcium group. All subjects completed the protocol. The mean dose of lanthanum carbonate was 1286 ± 488 mg daily (range 500-3000 mg; maximum allowed 3750 mg). The mean dose of calcium carbonate was 2205 ± 1076 mg daily (range 500-5000 mg; maximum allowed 9000 mg). Patients were compliant equally well with both drugs: 88.2% with lanthanum carbonate versus 85.4% with the calcium carbonate, as assessed by the returned tablet count. Serum phosphorus levels were controlled well in both groups, below 1.8 mmol/L throughout the study. There was no change in the serum calcium levels of the calcium group, while there was a decrease in the serum calcium levels of the lanthanum group. Episodes of hypercalcemia, defined as serum calcium levels greater than 2.56 mmol/L occurred in 50% of the patients during treatment with calcium carbonate, but there was no occurrence of hypercalcemia during treatment with lanthanum carbonate ($p<0.01$). On the other hand, an episode of hypocalcemia, defined as serum calcium lower than 2.12 mmol/L occurred in 70% of the patients in the lanthanum group and in only 33% of the patients in the calcium group ($p<0.01$). The serum levels of 25 hydroxyvitamin D, intact PTH, bone specific alkaline phosphatase did not change significantly during the study in either group. Lanthanum carbonate was well tolerated. No serious adverse events occurred during the study. We could conclude that lanthanum carbonate was an efficient and safe phosphate-binding agent. Using lanthanum carbonate, one could better control hypercalcemia in dialysis patients.

Is there association between depression and markers of chronic inflammation in patients on maintenance hemodialysis?

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OP

Depression is the most commonly psychological problem in hemodialysis patients (HD pts) associated with increased mortality and morbidity. There is an increasing evidence of a relationship between depression and inflammation in general population, however, in HD pts this relationship is not well documented. The aim of the present study was to screen the depression among our HD pts and to find any association between depression and markers of chronic inflammation. The study included 107 pts (54 male, aged 55.3+13 years), maintained by HD (97.2+66.5 month) at our Institute. They were screened for depression by using the self-administered Beck Depression Inventory (BDI) questionnaire. Score > or =11 was used to indicate a possible diagnosis of clinical depression. Plasma interleukin-6 (IL-6) and and IL-10 levels, measured by ELISA and C-reactive protein (CRP) by turbidimetric method, were used as inflammatory markers. Among tested pts 45.8% pts were depressed and after adjusted for age and HD duration, 78 eligible pts were divided into 2 groups according to BDI score: the depression-D group (No=35, BDI score 20.4+5.3) and the non-depression-nD group (No=43, BDI score 3.5+2.8). All the pts were dialysed at the same manner, by the biocompatible membranes and there were no significant differences in Kt/V, anemia and nutrition markers between groups. D group had significantly higher IL-6 (6.6+6.9 vs 3.5+2.34 pg/ml), higher CRP (7.9+9.7 vs 5.9+6.5mg/L) and lower IL-10 (2.2+2.1 vs 3.6+8.07 pg/ml), although without significance, compared to nD group. Significant positive correlation was found between BDI score and CRP ($r=0.276$) and IL-6 ($r=0.317$). In multivariate analysis BDI score was associated with IL-6 ($p=0.021$). In conclusion, the incidence of depression in our

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study population is very high (45.8%). IL-6 as proinflammatory cytokine, strongly associated with the degree of depression, but lower IL-10 as anti-inflammatory cytokine in the same depressed pts needs further investigation.

Correction of anemia in patients with adynamic bone disease on chronic hemodialysis treatment

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OP

In all published guidelines, therapy with erythropoietin is the basic requirement for adequate treatment of patients with end-stage renal disease. Dose requirements of recombinant human erythropoietin (rhEPO) could vary considerably among patients (pts). We studied requirements of rhEPO in two groups of pts with established histological diagnosis of renal bone disease: seven pts with hyper parathyroid bone disease (HPBD) and nine pts with adynamic bone disease (ABD). They were on regular hemodialysis treatment three times per week. Their hematocrit was below 27 vol%. The group with HPBD was younger: 42±8.2 versus 54±7.9 years of age, and longer on dialysis: 58.4±28.2 versus 43.2±21.5 months. Epoetin beta was administered subcutaneously three times per week. The initial weekly dose was 60 units/kg body weight. The dose could be adjusted at four-week intervals as needed, to achieve target hematocrit of 30-35 vol%. The patients were followed for a year. The target hematocrit and hemoglobin levels were achieved and maintained in both groups. At baseline and during the study period, the group with HPBD had significantly higher serum levels of parathyroid hormone (PTH), osteocalcin, bone and total alkaline phosphatase. The levels of calcium and phosphorus were well controlled (Ca~2.2 mmol/l; P<2.0 mmol/l) throughout the study, with calcium carbonate. Aluminum hydroxide was added where necessary to control phosphate levels. Calcitriol was given to some patients with HPBD to suppress the levels of PTH. The doses of rhEPO required to maintain target hematocrit were significantly higher in patients with HPBD compared to the patients with ABD. The mean individual weekly dose of epoetin beta in the group with ABD was 51.6 + 12.9 U/kg BW, while in the group with HPBD it was 80.4 U/kg BW. The markers for iron saturation (sFe, TIBC, Ferritin) indicated good iron supplies in both groups. Serum ferritin levels were always above 270 ng/ml. Second biopsy was performed at 12 months of rhEPO therapy to observe changes that might have occurred during the study. Reduction of osteoid surface and increased eroded surface was noted in both groups of patients. An increase of osteoclast surface and osteoclast number was only observed in the group with HPBD. On both biopsies, patients with ABD had significantly higher deposition of aluminum compared to the HPBD group, although the total dose of aluminum hydroxide was not different between the groups. Besides the need for an optimal bone tissue structure, and the reduction of the risk for soft tissue calcifications, the hyper parathyroid state should adequately be treated to achieve a better cost/benefit ratio with the rhEPO therapy as well. Despite the good control of calcium and phosphorus, an enhancement of bone turnover was noted in both groups, though it was more pronounced in the group with HPBD. In the absence of the known mechanisms for increased bone turnover, especially in the group with ABD, a possible role of erythropoietin could not be ruled out. However, further studies are necessary to elucidate this phenomenon.

Plasma total ghrelin levels in patients with end-stage renal disease: comparison with healthy subjects and relationship with haemodynamic parameters

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OP

Ghrelin is an orexigenic peptide identified in the stomach as a ligand for the growth hormone secretagogue-receptor. The effect of renal function on plasma ghrelin levels is hardly known. In addition, recent studies have shown that ghrelin has important hemodynamic effects. The aim, therefore, of this cross-sectional study was to examine differences in plasma ghrelin levels between patients with chronic renal failure (CRF) and healthy subjects. In addition, the relationship between plasma ghrelin levels with indices of left ventricular function was also evaluated.

We studied fasting plasma total ghrelin levels in 122 patients with CRF (57 on haemodialysis and 65 not on haemodialysis) and compared them with those of 57 control subjects. Indices of left ventricular systolic and diastolic function, left ventricular mass and myocardial performance index were measured using M-Mode and Doppler echocardiography.

Plasma total ghrelin levels mean (95% CI) were higher in patients with CRF compared to the controls: 4,620.4 (4,305.2-4,935.8) vs 1,998.6 (1,674.6-2,322.6) pg/ml (age-

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adjusted p<0.001). There was no difference of plasma ghrelin levels between patients on haemodialysis and those not on haemodialysis: 4,742.6 (4,305.8-5,170.5) vs 4,520.1 (4,055.3-4,948.3) (p=0.85). In a multivariate linear regression analysis model, presence of kidney dysfunction explained 41% of the variability of ghrelin values, while sex and body-mass-index another 5%. The etiology of renal failure (diabetic nephropathy or nephropathy from other causes) had no influence on ghrelin levels in the renal patients. Plasma ghrelin levels were associated with the early diastolic to atrial peak velocity ratio (p=0.003), but not with indices of systolic function of the left ventricle, left ventricular mass, myocardial performance index, or with blood pressure in the CRF patients.

Fasting plasma total ghrelin concentrations are higher in patients with renal failure, regardless of their need for haemodialysis, compared to control subjects. The etiology of renal failure also (diabetic nephropathy or nephropathy from other causes) has no effect on ghrelin levels. In addition, plasma ghrelin levels are not associated with haemodynamic parameters in patients with CRF.

Infections and malfunctions of temporary femoral catheters - hospital vs ambulatory patients

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OP

Femoral catheters (FC) for hemodialysis (HD) are usually kept in place for a short period of time (few days). We used FC instead as a temporary vascular access (VA) for a longer period of time. In a prospective study we looked at the outcome of a group of 460 patients (pts) receiving HD treatment via 501 FC during a 3 year-period. Catheters were removed when no longer required (permanent VA was performed) or significant complications occurred (malfunction or infection). A number of 341 pts with 364 FC started with HD -end stage renal disease (group A - hospitalized pts); and 119 pts with 137 FC were on regular ambulatory HD and had a problem with permanent VA (group B-ambulatory pts). In gr.B FC were inserted ambulatory and pts were sent home with FC. Univariate and multivariable analysis were conducted to examine association of hospital/ambulatory placed FC with sex, comorbidity of diabetes/malignancy, number of previous catheters, number of previous thrombosed AVF, catheters swab (positive/negative), microbiological analysis of catheter tip (positive/negative), blood culture (positive /negative) as risk factors. Duration of FC were: gr.A 5-120 days (median 32d) with cumulative total of 11 818 days; gr.B 6-199d (median 45 d) with cumulative total of 6132d. Electively removed FC: gr.A- 320 (88%), gr.B-130 (95%); malfunction of FC: gr.A- 18 (4,9%), gr.B- 5 (3,6%); suspected catheter-related infection (CRI) gr.A-18 (4,9%), gr.B-2(1,4%). Infection rate: gr.A- 1,52 episodes/1000 cath.days, gr.B- 0,81 episodes/1000cath. days. Kaplan-Meier curve of survival showed significant statistical difference between 60 and 80 cath.days of survival between two groups (log-rank test p=0,00001). Univariate analysis did not reveal significant risk factors in both groups. Using multivariant analysis the following risk factors were found: gr.A- sex (p=0,002905) and blood culture (p=0,006883); gr.B- number of previous thrombosed AVF (p=0,049508) and comorbidity of diabetes/malignancy (p=0,009928). The infection and malfunction free survival time was not affected by other analyzed risk factors. Recognizing and knowing the risk factors that are associated with infection and malfunction of the catheters can prevent complications. We concluded that FC can be used for a longer period of time for ambulatory HD without any problem, with permanent care of a specially educated VA team.

Comparative effects of lanthanum carbonate and calcium carbonate on renal osteodystrophy in patients with end-stage renal disease

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OP

The majority of patients with end-stage renal disease (ESRD) require phosphate binders to reduce serum phosphorus levels. However, calcium- and aluminium-based phosphate-binding agents may directly and indirectly adversely affect bone health. Lanthanum carbonate (LC) is a new phosphate binder that effectively controls serum phosphorus levels and is poorly absorbed. Here are presented the results from one centre that participated in a multi-centre trial to assess the effect of LC and calcium carbonate (CC) treatment on the evolution of renal osteodystrophy (ROD) in patients with ESRD. A subsequent 2 yr follow up biopsy was performed to assess the effects of lanthanum disposition on bone histomorphometry and rate of elimination from bone.

In this open label, randomized, parallel group study the first group of patients (LC-group) were treated with LC during one year (N=10) followed by a 2-year wash-out period during which phosphate binding treatment was continued on calcium carbonate CC (N=9). The second group [CC-group;

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(N=10)] received CC during the whole study period (3 years). In all patients tetracycline-labeled transiliac bone biopsies were obtained at baseline and after 1 and 3 years of treatment respectively for measurement of the bone lanthanum content quantitative histomorphometric analysis. Blood samples for measurement of lanthanum, relevant bone markers and routine biochemistry were taken at regular time intervals during the whole study period. Adverse events were monitored continuously.

Baseline plasma lanthanum levels (<0.03 ng/ml) in patients receiving LC reached a plateau after 24 weeks of treatment 1.26±1.24 ng/ml and gradually decreased up to the end of the treatment to 0.59±0.52 ng/ml and to 0.10±0.02 ng/ml at 3-year follow-up biopsy. At baseline, both groups of patients presented a similar distribution pattern of the various types of ROD, mixed (Mx) bone disease being the most predominant one. After 1-year LC-treatment bone lanthanum levels had significantly increased, however remained below 6 μg/g. In general, within this group a tendency towards normalization of the bone turn-over was seen whilst none of the patients developed low turn-over bone disease either expressed as osteomalacia or adynamic bone. During the 2-year wash-out period bone lanthanum levels remained almost unchanged. CC treatment went along with the development of adynamic bone (ABD) in 30% of the patients of the CC group (30% after 3 years of treatment), an evolution that was also seen during the 2-year wash-out period in the LC-group (22%) during which the patients were treated with CC.

Treatment with LC was not associated with deterioration of bone status in patients with ESRD. The moderate accumulation of lanthanum in bone during LC treatment and the persistence of the element in bone during wash-out showed no evolution towards low-bone turnover, unlike CC treated patients and no aluminium-like effects on bone.

Epidemiology of renal osteodystrophy in R.Macedonia

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OP

In recent years, an evolution in the spectrum of renal osteodystrophy (ROD) in renal failure patients has been noticed. Also, the management of ROD patients undergoing dialysis have experimented great changes, but they have not been uniform in all countries. In this paper we report the diagnosis and treatment of ROD in dialysis patients in R. Macedonia. All 18 HD Centers in our country were invited to fill in a questionnaire, with data related to the problem of ROD. A total of 16 Centers (88.8%) replied on this epidemiological survey including the data from 588 patients. The first part of the questionnaire was related to the clinical data (age, gender, renal diagnosis, duration of hemodialysis). The second set of data focused on the last determination of serum biochemical parameters: calcium (Ca), phosphate (P), total alkaline phosphatase (TAP), parathyroid hormone (PTH), osteocalcin (OC). Finally, the last set of data tried to identify the current therapeutic practice for dialysate Ca concentration, phosphate binding, vit. D treatment and performed parathyroidectomy (PTx). The questionnaire was sent together with a letter explaining the goals of the study and here we provide a preliminary and descriptive analysis of the main results.

The provided information on 588 patients represents 57.3% of our hemodialysis population. The demographic characteristics were: mean age of 53.3y, range (17-84), mean dialysis duration of 6.8±6.1y and 62.4% males being at similar age, renal diagnosis and dialysis duration as females.

The serum Ca concentration between 2.1 and 2.4 mM was found in 40% of patients, <2.1 mM in 19.9% and >2.4 mM in 40.1% of the patients. An ideal phosphate control <1.8 mM was achieved in 67% and CaxP product <4.4 was calculated in 71.1% of the patients. For PTH, the ideal was considered to be between 150 and 250 pg/ml in 13.6% of patients. A relatively small proportion had an interval between 250 and 450 pg/ml, i.e. 12.5%. PTH above 450 pg/ml considered as hyperparathyroid bone disease was found in 31.1% of the patients, but the largest part of patients with PTH <150 pg/ml considered for an adynamic bone disease (ABD) was calculated in 42.8% of the patients. This condition was also confirmed with findings of OC <23 ng/ml (high performance for diagnosis of ABD) in 63.6% of the study population. Conversely, TAP level <45 U/L was found only in 4.4% of the patients, which might be explained by the high percentage of HCV positivity (46.9%) as a confounding factor.

PTx was performed in only 7% of patients and dialysate Ca concentration of 1.25 was used in only 6.1% of the population. Calcium carbonate was the phosphate binding agent in 95.6% of patients, with a dose between 0.5 and 3 gr/day in most of the patients (72.1%). Vit. D (1-2 μg/week) was prescribed in almost half of the patients (47.4%).

In conclusion, this analysis gives useful information for the existing gap between diagnosis and treatment of ROD in our country. The use of high (1.75 mM) dialysate Ca concentration, calcium carbonate and vit. D treatment might be associated with development of ABD.

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C - reactive protein predicts all-cause mortality in hemodialysis patients

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OP

Mortality in dialysis patients remains extremely high despite significant improvements in the provision of dialysis over the past 20 years. The medical determinants of mortality in dialysis patients are well appreciated, but available evidence suggests that nutritional and inflammatory markers are closely linked to mortality in these patients. Our study objective was to evaluate the factors associated with all-cause mortality in a cohort of hemodialysis patients (pt) treated in a single hemodialysis center. A total of 217 pts on hemodialysis were followed up for a period of 24 months (between January 2003 and December 2004). Serum albumin, CRP (C-reactive protein) and hemoglobin (Hg) were measured monthly, and serum fibrinogen every third month. We also analyzed BMI (body mass index), predialysis blood pressure, PCR (protein catabolic rate), single pool-spKt/V and equilibrated -eKt/V. Fifty-five (25.3%) out of 217 died between January 2003 and December 2004. The pts who died had significantly higher serum levels of CRP (34.26 + 21.72 vs 8.74 + 7.013, p=0.000), fibrinogen (5.28 + 1.28 vs 4.42 + 0.97, p=0.000), but lower serum levels of albumin (39.42 + 4.36 vs 36.13 + 4.32, p=0.000), Hg (93.72 + 16.03 vs 108.83 + 12.50, p=0.007), spKt/V (1.14 + 0.25, vs 1.21 + 0.19, p=0.049), eKt/V (1.00 + 0.21, vs 1.10 + 0.17 p=0.038) and were significantly older than those who survived. The total group of pts showed a negative linear correlation between CRP and serum albumin levels (R=-0.036, p=0.0000). Kaplan-Meier survival estimates of pt from varying CRP quartiles (<6; 6-10; 10-20; >20 mg/l) differed among the four groups (log-rank test, p=0.00000). The group with the greatest CRP (>40 mg/l) had the lowest survival curve. Kaplan-Meier survival curves among the subgroups with varying albumin, Hg, fibrinogen levels, showed also statistically significant difference (p=0.0008, p=0.0395, and p=0.0000, respectively). Multivariate analysis using the Cox proportional hazards model showed that only high CRP level, low Hg, and older age (chi-square=101.03, p=0.0000) were predictors for death. Serum level of albumin did not show to be predictive. But, when CRP was excluded from the Cox model, low serum albumin level did show to be a predictor of death, followed by older age and low Hg (chi-square=90.54, p=0.0000). It can be concluded that all-cause mortality in our study group, although associated with low albumin, may not be due to malnutrition per se, but rather to severe inflammation, because CRP was a stronger predictor of death than low albumin.

Propyl gallate-induced platelet aggregation in patients with end stage renal disease-the influence of hemodialysis procedure

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PP

Platelet dysfunction is a well-established disturbance in hemodialysis (HD) patients. Propyl gallate is a synthetic platelet activator with the unique property to stimulate platelet aggregation via many pathways (fibrinogen receptor, arachidonate, ADP and its receptor). Several studies concerning the impact of HD on platelet aggregation have shown conflicting results. The aim of this study was to evaluate the influence of a single hemodialysis session on propyl gallate-induced platelet aggregation assessed by slide aggregometry in patients with end stage renal disease. Methods: Thirty-nine clinically stable patients on chronic hemodialysis were enrolled into a cross-sectional study and 20 healthy volunteers were used as controls. None of the patients or healthy volunteers was receiving antiplatelet agents. Cellulose diacetate (CD) dialysers were used in 20 patients and polysulfone (PS) dialysers in 19. Bicarbonate HD was performed via an A-V fistula in 27 patients and via a central intravenous catheter in 12. Recombinant human erythropoietin (rHuEPO) was administered in 37 patients (epoietin-alpha in 24 and darbepoietin in 13). Thirty-four were receiving the low molecular weight heparin (LMWH) tinzaparin in every HD. Blood was drawn before and after a single HD session in each patient. Platelet aggregation was assessed in platelet rich plasma (cPRP) with propyl gallate-induced platelet slide aggregometry. Results: In comparison to control subjects in the group of hemodialysis patients platelet aggregation was impaired before as well as after the HD session. No effect of the hemodialysis procedure, type of vascular access, adequacy of dialysis treatment or type of erythropoietin on the propyl gallate-induced platelet aggregation was detected. Platelet aggregation was higher if CD dialyser was used instead of PS dialyser. A negative correlation between the between the time needed for platelet aggregation to occur and tinzaparin dose was found. Conclusions: Propyl-gallate induced platelet aggregation in HD patients is impaired. Platelet aggregation was higher in patients dialyzed with CD membrane than in those dialyzed with PS membrane. The higher was the dose of tinzaparin, the higher the platelet aggregation. The clinical significance of the above results, in relation with the bleeding or thrombotic episodes in HD patients, needs further evaluation.

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Aortic stiffness in hemodialysis patients is positively related to antigen presenting cell-dependent T-lymphocyte reactivity

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PP

Aortic stiffness is increased in hemodialysis (HD) patients and it is associated with an increased cardiovascular mortality. Among others, aortic stiffness has been correlated with serum markers of inflammation, indicating a role of the immune system in its pathogenesis. The aim of this study was to evaluate the impact of antigen presenting cell-dependent T-lymphocyte reactivity on aortic stiffness in HD patients. Patients and Methods: Twenty patients were enrolled in the study. Exclusion criteria were medications or conditions, other than HD, that are known to influence the immune response or aortic stiffness. Antigen presenting cell-dependent T-lymphocyte reactivity was assessed by cell proliferation of peripheral blood mononuclear cells cultured with or without stimulation with Staphylococcal enterotoxin B (SEB). Cell proliferation was estimated by immunoenzymatic measurement of bromodeoxyuridine uptake. Aortic stiffness was assessed by carotid-femoral pulse wave velocity (PWV) measurement. Results: Linear regression analysis revealed a strong positive relation between carotid-femoral PWV and antigen presenting cell-dependent T-lymphocyte reactivity, when SEB at the concentrations of 1ng/ml or 10ng/ml was used as stimulant. Conclusion: The present study confirms that aortic stiffness in HD patients is positively related to antigen presenting cell-dependent T-lymphocyte reactivity. The greater the ability of the immune system to react to monocyte-dependent stimulant, and consequently to provoke an inflammatory response, the greater the stiffness of the aorta. This is in agreement with the observation that aortic stiffness in HD patients is positively related to various serum inflammation markers.

The value of computed tomography-derived coronary artery calcification score in coronary artery disease detection in asymptomatic hemodialysis patients

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PP

Silent myocardial ischemia is quite common in hemodialysis patients. We evaluated the value of coronary artery calcification (CAC) score in coronary artery disease (CAD) detection in asymptomatic HD patients, by evaluating the association among CAC score, exercise electrocardiography (EECG) and Thallium-201 dipyridamole scintigraphy. Correlation between aortic pulse wave velocity (PWV) and CAC score was evaluated too. Patients-Methods: CAC score was assessed with conventional CT in forty patients. Thirty patients completed EECG and 25, those with a positive CAC score and/or a positive EECG, performed Thallium dipyridamole scintigraphy. Carotid-femoral PWV was assessed in all patients. Results: CAC score was positive in 23 of the 40 patients. Only 4 of the 30 patients who achieved to complete EECG were positive for CAD, and in 2 of them CAC score was positive too. Seven of the 25 patients who performed Thallium-201 dipyridamole scintigraphy were positive for CAD and 6 of them had a positive CAC score too. There was no association among CAC score and EECG or Thallium dipyridamole scintigraphy. In contrast, CAC score was correlated with aortic PWV. Conclusion: The above results question the role of CAC score in the detection of CAD in asymptomatic HD patients. The correlation between CAC score and aortic PWV raises the possibility that CAC score represents more an indicator of coronary artery medial wall calcification than a marker of CAD.

Hypertension in diabetic patients on maintenance hemodialysis

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PP

There is a wealth of clinical data showing the relationship between diabetes mellitus (DM) and arteriosclerosis and its clinical complication hypertension (HT). It's an immensely

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important co-morbidity of diabetic patients (pts) with end-stage renal disease (ESRD) and on maintenance hemodialysis (MHD). The purpose of the present study was to evaluate the prevalence of hypertension (HT) and the type of treatment of HT in a cohort of (pts) with DM on MHD in the Republic of Macedonia. Data from medical records of 109 (10%) pts, male 60 (55%) and female 49 (45%), with DM type 1 and DM type 2, on HD were analyzed from a total number of 1114 pts on MHD. The mean age of the type 1 diabetic group was 47+11.6 years (y) and their diabetic history was 16.2+9.7 y. In the group with type 2 DM the mean age was 60.4+8.3 y and their mean diabetic history was 13.4+8.1 y. The average period of insulin use was 9.5+6.6 y. Smokers were 21% and alcohol consumers 12.9%. Average body mass index in DM 1 pts was 24.57±5.38 4.96 kg/m^2 and in DM 2 pts was 25.48±4.96 kg/m^2. The date 31.12.2002 was taken as a "critical day" for data evaluation of pts on HD with DM. Data were collected by a specially prepared questionnaire. Cardiovascular diseases (CVD) were highly prevalent at the start of HD: HT (91%), volume dependent very common, pectoral angina (7.2%), myocardial infarction (5.4%), intermittent claudication (10%), pain during rest (6.3%), diabetic foot (3.6%), cerebrovascular accident (7.2%). The most common co-morbidity during MHD was HT in 40.54% with an average duration of 12.3 (+8.31) y. Familial history of HT had 43.24% of pts. The other comorbidities during MHD were: pectoral angina (19%), myocardial infarction (5.4%), intermittent claudication (10%), pain during rest (14%), diabetic foot (9%), cerebrovascular accident (8%). Therapy of HT during MHD was: Ca antagonists in 29.35%, ACE inhibitors in 11%, α blockers in 0.9%, α blockers + β blockers in 0.9%, Ca antagonists + ACE inhibitors in 22%, α blockers + ACE inhibitors in 1.83%, β blockers+ Ca antagonists in 1.83%, other combinations in 12.84% and without therapy 19.26% pts. HT was present in 91% of pts with DM at the start of HD and 41% during HD treatment. There is no early detection of diabetic nephropathy and HT in our pts. It is recommended that lower blood pressure (BP) of 130/80 mmHg should be the cut-off point for defining HT in diabetic pts. The first line anti-HT drugs should be ACEi and Angiotensin receptor blockers (ARB). Optimizing the use of medications and closer attention to nonpharmacological intervention, such as adjustment of dry weight, a low sodium diet, and exarcise may improve control. However, reaching the target level of BP and avoidance of fluid overload are probably more important than the choice of individual anti-HT drugs during the ESRD.

Diabetics on hemodialysis in the Republic of Macedonia

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PP

In recent years the incidence of diabetes mellitus (DM), especially in the developed world is taking epidemic proportions. One of its serious complications - diabetic nephropathy (DN) is taking over as the leading cause for end-stage renal disease (ESRD). The aim of the study was to take a closer observation of the patients (pts) with DM and ESRD treated by maintenance hemodialysis (MHD) in all 17 dialysis centers throughout Republic of Macedonia. The pts were examined by a questionnaire, circulated to all centers on the so-called "critical day" - December 31, 2002. The prevalence of pts on MHD was 1114. Out of this number, 109 (10%) pts had DM, 60 were male and 49 female. The prevalence of DM among the dialysis population varied between 3% in the city of Veles and 21% in Kavadarci. At the Department of Nephrology of the Medical Faculty in Skopje, it was 15%. The mean age of all pts with DM and ESRD was 58 years (y); it was 56 y of the male pts and 60 y of the female. With type 1 DM were 19 pts, while 90 had DM type 2. A number of 28 pts of the latter were treated with oral anti-dm drugs, while 68 pts were on therapy with insulin. The mean age of the type 1 diabetic group was 47±11.6 y and their diabetic history was 16.2±9.7 y. In the group with type 2 DM the mean age was 60.4±8.3 y and their mean diabetic history was 13.4±8.1 y. The average period of insulin use was 9.5±6.6 y. The mean duration of HD therapy of the type 1 group was 54.3±44.4 months (m), while the pts with DM type 2 were treated for 34.3±36.3 m. The mean body mass index (BMI) of the type 1 diabetics was 24.6 kg/m2, while that of type 2 group was 25.5 kg/m2. 90% the DM pts were initiated on HD via a temporary femoral catheter access, because of the urgent need for renal replacement treatment. Preventive arteriovenous fistula (AVF) had been created in only 10% of the diabetic group. Vascular access complications in this group occurred with the following frequency: thrombosis of AVF in 41%, infection in 59%, and new vascular access was created in 27% of the pts. Hepatitis C virus (HCV) infection was positive in 57% of the pts. 81% were treated with recombinant human erythropoietin, 51% with calcitriol. 86% of the pts received 12 hours of dialysis per week, 11% received 8 hours, while 3% were treated for 6 hours. 21% of the group were smokers, 13% consumed alcohol, and 15% exercised some sport. The most frequent co-morbidity was hypertension (HT), being present in 91% of the group in the predialysis period, and in 40% during MHD. Family history of HT had 43% of the pts. The most frequent cardiovascular complications included: pectoral

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angina in 19%, myocardial infarction in 5.4%, intermittent claudication in 10%, pain during rest 13.5%, diabetic foot in 9%, and cerebrovascular accident in 8%. Survival of the DM pts on MHD was shorter than that of the rest of the dialysis population. Early detection of DN by the general physicians and co-operation during treatment with diabetologists, nephrologists, cardiologists, ophthalmologists are imperative for long survival and good quality of life.

Apolipoproteins and cardiovascular disease (CVD) in pts on HD

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PP

To study the significance of serum apolipoprotein-A1 (ApoA1) and -B (ApoB) levels in relation to cardiovascular disease in pts with end-stage renal disease (ESRD) on chronic haemodialysis (HD). Methods: We studied 36 pts with ESRD (19 males, mean age 66±9 years), stabilized on HD (mean duration 58 months, range 6-210). 10 pts (28%) had a history of documented CVD (6 males, mean age 72±4 years). Smokers and pts with diabetes mellitus were evenly allocated in both groups. All blood samples were collected in the morning of a midweek routine dialysis day. Serum concentrations of total cholesterol (TC), triglycerides (Tg), HDL, LDL, ApoA1, ApoB and lipoprotein-a (Lpa) were assessed in relation to hsCRP, as a marker of inflammation, CVD, duration of HD, age and sex. Student's t-test, linear and logistic regression analysis were used for the statistical analysis of the parameters (mean±SD). Results: ApoA1 and ApoB were significantly lower, while Lpa and hsCRP were significantly higher in pts with CVD compared to pts without (1.14+0.17 vs 1.30+0.32g/L, $p<0.001$, 0.75+0.16 vs 0.84+0.2g/L, $p<0.001$, and 0.47+0.26 vs 0.36+0.27mg/dL, $p<0.001$, and 0.74+0.56 vs 0.6+0.29mg/dL, $p<0.001$, respectively). ApoA1 and ApoB were negatively correlated to CVD ($R=0.279$, $P<0.001$). ApoA1 were negatively correlated to hsCRP ($R=0.22$, $P<0.001$) and the age of the pts ($R=0.263$, $P<0.001$) and positively correlated to HDL ($R=0.81$, $P<0.001$), and the duration on HD ($R=0.205$, $P<0.001$). Conclusions: Although the exact pathogenetic links are missing, in our study ApoA1 and B were found to be negatively related to CVD, whereas ApoA1 related negatively also to inflammation (hsCRP). The positive correlation of ApoA1 to the duration of HD might reflect a survival advantage of HD pts with higher ApoA1 levels.

Inflamatory factors and EPO therapy in hemodialysis patients

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PP

A number of authors suggest that inflammation can be one of the reasons of erythropoietin (EpO) resistance. The purpose of the study was to follow up some laboratory markers of inflammation in 34 hemodialysis patients (pts.) all treated with adequate doses EpO more than 1 year, without iron deficiency, comparing them in 2 groups: 1st - 17 pts. whose Hb levels were higher than 10g/l and 2nd - 17 pts. whose Hb were lower than 9 g/l. Some acute phase proteins and markers of inflammation were measured in blood as follows: C-reactive protein (CRP), α-1 - AGP, haptoglobine (HP). Hb, RBC, WBC-count, ASAT, ALAT, urea creatinine, albumins, lipid profil, glucouse, phosphates, iron, electrolytes and PTH were tested as well. The study found significantly higher CRP ($p<0.01$), HP ($p<0.005$), Tg ($p<0.01$), P($p<0.01$), and lower Alb($p<0.01$), in the 2nd group than in the 1st. There was no iron deficit or severe parathyroid hyperfunction in both groups to be convicted for EpO resistance in the 2nd group. The study suggests that EpO resistance is related to inflammation state (higher CRP, HP and lower Alb in the 2nd group well proved the presence of the last). Tg are proatherogenic factor, found higher in the 2nd group pts., again perhaps due to the inflammation, i.e. that means probably that the inflammation state cases atherogenesis. Why serum phosphates are higher in the 2nd group pts.? It is an open question and awaits its discovery in the future.

Vascular calcification rate and some bone markers in CAPD and HD patients

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PP

A number of studies have shown that renal osteodystrophy (ROD) has some differences in patients on CAPD and those treated by hemodialysis (HD), i.e. in CAPD prevails low bone turnover ROD and in HD - high bone turnover ROD. To prove that in patients on CAPD and HD and to show whether those differences influence vascular calcification rate the study compared some serum bone markers of ROD in 2 groups - group 1 (n=9), on CAPD and group 2 (n=9) - on HD and the rate of their vascular calcification. The patients were comparable according to their duration of dialysis treatment (16+7 months vs. 18+6 months). Methods: The presence of arterial calcification was

evaluated by ultrasonography with longitudinal and transversal scan (7.5 MHz transducer) in the common carotid artery (a segment of 4 cm length, in the pre-bifurcation), and in the iliofemoral axis. Blood measurements included serum levels of: Ca++, P, AP (alkaline phosphatese), PTH, osteocalcin (OC) (marker of bone formation) and dioxypiridinolyne (DYP) (marker of bone resorption) and Fetuin A (a new marker of tissue calcification). Results: The results showed significantly higher levels of PTH ($p<0.01$), AP ($p<0.05$), OC ($p<0.01$) and DYP ($p<0.01$) phosphates and Fetuin A in HD patients. Serum Ca++ was not different in the investigated groups. Vascular calcification rate was higher in HD than in CAPD group. Conclusion: The suggestion is that bone turnover in HD patients is higher than in CAPD and it predisposes higher rate of vascular calcification regardless of the similar levels of serum Ca++.

Estimation of quality of life in patients treated with repeated hemodialyses

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PP

Treatment of terminal renal insufficiency with hemodialyses is very successful and enables significant prolongation of life span for kidney patients. Since recently, the health workers have begun putting emphasis on a maximal rehabilitation of patients and individual perception of own well being has become more significant. In order to estimate patient's opinion on his own health condition, numeric tests are used (general and specific). The aim of this study is to estimate and compare the quality of life of patients who are treated with repeated hemodialyses in two dialysis centers - in Bijeljina and Doboj, in order to establish whether anemia and hemodialysis adequacy affect certain aspects of life quality. Patients and methods: A total of 190 patients were tested (137 in Bijeljina and 53 in Doboj). The study relied on the questioner KDQOL-SF, version 1.3 (Kidney Disease Quality Of Life - Short Form) of Prof. Hays et al., which was published in the USA in 1994. This questioner consists of 2 parts: general and specific. The general part consists of 36 items divided into 8 scales. The specific part consists of 11 scales with questions relating to problems of patients who are treated with repeated hemodialyses. Average values and standard score deviations for each scale were calculated as well as the student T test for importance of average value difference between the two groups of patients. Results: Important differences in score values ($p<0,05$) were found in 5 scales: SP (symptoms/problems), WS (work status), CF (cognitive function), DSE (dialysis staff encouragement) and GHP (general health perception). Bijeljina patients had higher scores in scales: SP, WS, CF and GHP. Doboj patients had higher scores in DSE scale. Bijeljina group of patients did not show any significant correlation between hemoglobin concentration and average score values in scales, while Doboj group of patients had significant correlation with 2 scales: SOF (social function) and EF (energy/fatigue). In Bijeljina group, the hemodialysis adequacy (Kt/V - Daugirdas) had significant positive correlation with 4 scales: DSE (dialysis staff encouragement), PF (physical function), EWB (emotional well-being) and PS (patient's satisfaction) while Doboj group showed no significant correlation between hemodialysis adequacy and life quality. Conclusion: KDQOL-SF test has proved itself to be very simple, useful and all-encompassing test for estimation of quality of life of patients who are treated with repeated hemodialyses.

Comparison of atherosclerosis and atherosclerotic risk factors in patients with hemodialysis and peritoneal dialysis

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PP

Cardiovascular disease is an important cause of mortality and morbidity in patients with chronic renal failure. There is a significant increase in the prevalance of cardiovascular events in patients with chronic renal failure because of several reasons. There are contraversial reports from the studies investigating the relationship between renal failure and atherosclerosis in the literature. The aim of this study was to compare atherosclerosis and atherosclerotic risk factors in patients with ongoing hemodialysis and peritoneal dialysis. METHODS: 65 patients with end-stage renal failure (33 hemodialysis, 32 peritoneal dialysis) were enrolled in this study.Patients were allocated as Group I (Hemodialysis) and Group II (Peritoneal dialysis). There was no difference in age, sex, dialysis duration, smoking, presence of hypertension between the two groups. Serum triglyserides, total cholesterol, HDL, LDL, lipoprotein (a), apolipoprotein A-1, apolipoprotein B, apolipoprotein E, albumin, CRP, fibrinogen, ferritin, intact parathormon, calcium, calcium x phosporus levels were measured in patients who were enrolled in the study. Carotic intimal media thickness and number of present plaques were determined by using B-mode Ultrasonography in all patients. RESULTS: There was no statistically significant difference between the two groups when serum triglyserides, total cholesterol, HDL, LDL, apolipoprotein A-1, apolipoprotein B, apolipoprotein E, albumin, CRP, fibrinogen, ferritin, intact parathormon, calcium, calcium x

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phosporus levels were calculated. Lipoprotein (a) levels were significantly higher in Group II (p<0.05).When carotis intimal thickness and number of plaques were assessed we found out that there was no significant difference between the two groups.Number of plaques was positively correlated with CRP levels (r = 0.33, p<0.01) whereas negatively correlated with serum apolipoprotein A-1 (r = -0.26, p<0.05) and serum albumin (r = - 0,25, p<0.05). CONCLUSION: There was no statistically significant difference in lipid profile, intima medial thickness, and number of plaques between hemodialysis and peritoneal dialysis.It may be useful to consider atherosclerosis and atherosclerotic risk factors in the treatment of renal failure. Key words: Hemodialysis, peritoneal dialysis, apolipoproteins, atherosclerotic risk factors.

Clinical features and atrial fibrillation in dialysed patients

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PP

Chronic atrial fibrillation (AF) is the most common sustained arrythmia in general population. Data indicate that about 10% people in their 80s have AF. Although AF has been considered for a long time as a benign rhythm disorder it carries a significant morbidity and mortality. So, the treatment of AF became obligatory. The prevalence of AF in chronically dialyzed patients is reported to be around 6%. The aim of the study was to evaluate the frequences of AF and associated factors in our haemodyalized patients. In 47 patients, mean age 50.1± 12.4, 22 males, dialytic age 6.64±2 yrs, AF was reported in 18(38%). Patients with AF were older than pts with sinus rhythm (51.8±13.78 vs 47.3±11, NS) and showed longer dyalitic age (6.1± 5.2 vs 5.1±4.8, p<0.05). AF patients showed predialytic hyperkaliemia (6.18+0.61 vs 5.61+0.39 mmol/L, p<0.01), left atrial dilatation (4.6+0.71cm vs 3.56+0.57 cm, p<0.001). In atrial fibrillation patients left ventricular ejection fraction (LVEF) was 48.81+8% vs 58.4+11% in pts in sinus rythm, p<0.01. In atrial fibrillation patients there were 6 patients with cerebrovascular accident and there was only 1 patient in sinus rhythm group. There were no difference in frequence of diabetes mellitus and values of hypertension these two groups. Conclusion: The occurrence of atrial fibrillation in our dialyzed patients is higher than expected. The presence of this arrhythmia was associated with older age, longer dialytic age, predialytic hiperkaliemia and left atrial dilatation.

Beneficial effects of calcitriol therapy on anemia and erythropoietin response in hemodialysis patients with secondary hyperparathyroidism

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PP

The aim of the study was to asses the effects of calcitriol therapy on anemia and erythropoietin (r-HuEPO) response in hemodialysis patients with severe secondary hyperparathyroidism (HPT). Twenty six patients with the average age of 48,46 ± 12,43 years and duration of hemodialysis (HD) treatment 7,11 ± 4,78 years were followed under erythropoietin-beta treatment and calcitriol therapy (1-2 μcg/day) for a period of 12 months. The control group consisted of 38 patients with average age 44,23 ± 12,8 years and duration of HD treatment 6,48 ± 3,8 years without signs of rHuEPO hyporesponsivness. Laboratory parameters in the serum included: hemoglobin, ferritin, percent transferrin saturation (TSAT), CRP, albumin, transferrin and intact parathyroid hormone (PTH). Calcitriol therapy significantly suppressed secondary HPT, improved hemoglobin level and reduced the requirements of r-HuEPO doses in refractory anemia caused by severe secondary HPT in HD patients. In the control group no significant changes of the observed parameters were noticed. In both groups the predictors of rHuEPO hyporesponsivness as iron indices (ferritin, TSAT) and acute phase proteins - positive (CRP) and negative (albumin, transferrin) as inflammation markers were within normal limits during the followed period. The beneficial effects of calcitriol therapy on anemia and r-HuEPO response in HD patients appear to support a role for secondary HPT in resistance to r-HuEPO therapy. CALCITRIOL GROUP; n = 26 0 months 12 months Significance PTH (pg/ml) 818 + 526 201 + 147 p < 0.001 Hemoglobin (g/L) 89,6 + 15,76 117,1 + 18,9 p < 0.001 r-HuEPO (U/kg/w) 246 + 68 182 + 52 p < 0.01 Ferritin (ng/ml) 353 + 262 342 + 275 n.s. TSAT (%) 25,38 + 14,23 27,18 + 12,56 n.s. CRP (mg/L) 5,67 + 4,64 4,35 + 3,24 n.s. Albumin (g/L) 38,84 + 3,26 40,2 + 2,67 n.s. Transferrin (mg/dL) 135,4 + 28,9 141,3 + 32,3 n.s. CONTROL GROUP; n = 38 0 months 12 months Significance PTH (pg/ml) 245 + 138 274 + 143 n.s. Hemoglobin (g/L) 121 + 23 118 + 27 n.s. r-HuEPO (U/kg/w) 65 + 28 58 + 25 n.s. Ferritin (ng/ml) 334 + 217 328 + 221 n.s. TSAT (%) 28,26 + 18,16 26,14 + 15,38 n.s. CRP (mg/L) 4,62 + 3,4 5,63 + 4,2 n.s. Albumin (g/L) 40,05 + 2,1 39,3 + 3,2 n.s. Transferrin (mg/dL) 137,4 + 34 143,5 + 32,6 n.s.

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Prognostic value of cardiac troponin T in chronic hemodialysis patients

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PP

Cardiac troponin T (cTnT), a subunit of cardiac actin-myocin complex, is a highly sensitive and specific marker of myocardial damage. Stable hemodialysis (HD) patients (pts) have a high prevalence of elevated cTnT, variably associated with poor survival. We studied cTnT associated factors and elevated cTnT prognostic significance in a single center HD pts. Forty stable anuric pts were initially evaluated for presence of left ventricular hypertrophy (LVH, echo criteria), increased C-reactive protein (normal CRP<5 ng/ml), age, time on HD, hemoglobin, ferritin, albumin, homocysteine, urea reduction ratio, protein catabolic rate, smoking habits and antihypertensive drugs. After the mean of two cTnT determinations, assessed using a second-generation assay, before mid-week dialysis, pts were grouped into a high (cTnT >0.1 ng/ml), (A, n=12) and a low (cTnT <0.1 ng/ml) (B, n=28) group. Four pts with known ischemic heart disease (IHD) were included in each group according to their cTnT levels. All pts were subsequently followed during 13 months for ischemic heart events (IHE) and/or death. In all pts, cTnT levels correlated positively with age (R2=0.179; P<0.01) and negatively with albumin (R2=0.374; P<0.001). Albumin was also negatively correlated with CRP (R2=0.118; P<0.03). A vs. B group were significantly different in age (72.6+11.8 vs. 63.2+9.3 years; P<0.01), albumin (3.3+0.23 vs. 3.7+0.3 g/dl; P<0.01), high CRP (9/12 vs. 8/28 pts, x2=5.08; P<0.02) and LVH (5/12 vs. 4/28 pts; x2=5.32; P<0.02). No significant difference was found in the other parameters studied. In the follow-up, 3/40 pts died (1/12 in A vs. 2/28 in B; P=NS) and 6/40 pts had at least one IHE (4/12 in A vs. 2/28 in B, x2=4.52; P<0.04). Pts with IHD had significantly higher cTnT compared to the non-IHD pts (0.17+0.10 vs. 0.08+0.07 ng/ml, P<0.05). Our data suggest that high cTnT is frequent in stable hemodialysis patients. Although cTnT was not a predictor of short-term survival, it was a useful prognostic test to stratify patients for a high risk of ischemic heart events. Age, albumin, CRP and LVH are significant factors for cTnT increase in hemodialysis patients.

Red blood cell fragility in stable ESRD patients on hemodialysis or peritoneal dialysis

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PP

Red Blood Cell Fragility (RBCF) is reported abnormally high in ESRD patients. Various factors have been associated to this additional cause of CRF anaemia. Conflicting evidence exists on whether Hemodialysis (HD) and Peritoneal Dialysis (PD) can restore erythrocyte membrane resistance. We evaluated RBCF by measuring Erythrocyte Osmotic Resistance (EOR) in 63 stable ESRD patients treated by HD or PD. Factors involved in abnormal RBCF were also studied: Time on Dialysis (TOD), presence of Diabetes, CRP, iPTH, Plasma Osmotic Pressure (POP), serum Albumin (ALB), Urea (U) and Creatinine (CR). EOR was also measured in 34 healthy individuals. There were 41 M/22 F, aged 64 (36-92) years, on dialysis since 38 (6-216) months and 16 patients were diabetics. Between the 42 HD and 21 PD patients studied, sixteen patients were found with normal EOR (0.480±0.441), (group A, 25.4%), while 47 had an abnormally low EOR (0.016±0.012), (group B, 74.6%). Sex, age and diabetes, were found similarly distributed in both A and B groups, as it was also the case for abnormal CRP levels, TOD, EPO needs, POP, ALB, U and CR. Low EOR was found in 14/21 patients (66.6%) treated by PD and in 33/42 (78.6%) treated by HD, all included in group B. Also in group B, 11/47 (23.4%) patients and 5/16 (31.3%) in group A, were diabetics. Correlation of EOR to the above studied factors was found in patients of group B, except for a negative one to serum urea levels (R2 = 0.122, P<0.02). Red Blood Cell Fragility is common in ESRD patients treated either by HD, where it is more often found, or by PD. Low levels of iPTH were associated with abnormal Red Blood Cell Fragility in diabetic and non-diabetic patients. Serum urea was found inversely related to the severity of abnormal Red Blood Cell Fragility. No relation could be found between Red Blood Cell Fragility and time on dialysis or inflammation-malnutrition presence (which was significant in diabetics).

Maturation of arteriovenous fistula for hemodialysis: clinical evaluation

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PP

The aim of this study was to analyze demographic, clinical and laboratory markers in regard to maturation of arteriovenous fistula for hemodialysis as well as the analysism of the correlation between the primary disease that resulted terminal renal insufficiency and fistula maturation. METHODS: There were 106 patients included in this study. Patients participating were all hospitalized in Nephrology and Dialysis Department, Urology and Nephrology Clinic, Clinical Center in Kragujevac (Serbia and Montenegro), between 2003 and 2004, in order to form permanent blood access. Patients were divided in two groups a group with non-maturating fistula and a group with successful fistula maturation. RESULTS: We had total rate of maturating-fistulae at 75,5% of patients and non-maturating rate was recorded at 25,5% of patients. There was no statistically significant difference in sexual structure among groups (p>0,05). There was statistically significant difference in age distribution of patients among groups (57,88±13,86 vs. 63,8±12,13; p>0,0494). In structure of the primary disease there were mostly patients with glomerular diseases among patients with maturating fistulae, and a dominant category among non-maturating fistulae was hypertensive nephropathy. There is statistically significant difference between examined groups of patients in regard to sedimentation speed (94,1+29,46 vs. 69,9+36; p=0,0051) and the diameter of the vein used for anastomosis (1,81+0,53 vs. 2,35+0,68; p=0,014). There wasn't any significant difference in other examined clinical-biochemical parameters among groups. CONCLUSION: Younger patients have higher incidence of AV fistula maturation, glomerular diseases are prevalent in patients with maturating fistulae, patients with higher venous segment diameter of AV fistula have higher rate of arteriovenous fistula maturation.

Is there a seasonal variation in mortality in hemodialysis patients?

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PP

Mortality rates among hemodialysis (HD) patients differ considerably between and within countries. The aim of this study was to analyze overall and specific mortality in patients on regular hemodialysis during the last 8 years (1997-2004) and to investigate possible monthly and seasonal fluctuations in deaths.

Baseline demographic characteristics together with primary renal disease, previous peritoneal dialysis, cause, month and season of death were observed. Seasons were divided into four periods: December-February (winter), March-May (spring), June-August (summer) and September-November (autumn).

Total of 254 HD patients (59 % males) who died from 1997 to 2004 were included; overall mean age was 62.1 ± 11.2 years (range 27-88), with 47.6% aged over 65 years (60% in 2004); age significantly increased from 59.4 ± 13.1 years in 1997 to 66.0 ± 7.5 years in 2004 ($p<0.05$). Even so, mortality rate decreased from 17.2% in 1997 to 9.2% in 2004. The mean HD duration was 72.6 ± 68.9 months; 18.9% of patients were previously on peritoneal dialysis (highest distribution in 2004 i.e. 25%). No statistically significant difference in seasonal mortality was found throughout the whole observation period. Still, higher frequency was observed in summer and winter periods (28.3% and 27.2%, respectively) with mortality peaks in June and December (11% each). The leading cause of death in both months was cardiac diseases (50% and 46.4%). Throughout the whole period cardiac diseases were the main cause of death (46.1%, $X^2=230.08$; $p<0.01$). Higher percentage of cerebrovascular deaths (17.9%) was observed in June (overall 11%). Cerebrovascular deaths and infections were more frequent in summer. No significant seasonal variations for specific mortality were found. For elderly patients higher mortality was observed in autumn and winter (p = ns). Insignificant seasonal variations were observed for sex, primary renal disease, age and HD duration.

Although without statistical significance, this single-center analysis showed that mortality rates differ between the seasons. Elderly patients with cardiovascular diseases should be in focus during June and December, at least in our region.

Recombinant human erythropoietin - Darbopoietin alpha intravenous and subcutaneous administration dose equivalence in hemodialysis patients

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PP

Synthetic erythropoietin (EPO) Darbopoietin alpha (D) has been proposed as easier to use and more bio-available than the recombinant form of human EPO (RHuEPO). A conversion factor of 200:1, based on the equivalence of their peptide mass, has been advanced for both subcutaneous (SC) and intravenous (IV) weekly doses. We tried to certify the equivalence of the two erythropoietic factors, based on this dosage conversion factor, in both the SC and IV route of administration, in a group of 9 stable hemodialysis patients, 6 M/ 3 F with stable Hb levels, The

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same dose of erythropoietin was administered either IV (4 patients) or SC (5 patients) through the study period. Ferritin levels were >200 ng/100ml in the last 3 months and CRP was normal (<5 мg/l). Thereafter as administered folic acid and IV iron were kept stable, D for 6 months (period A) (38.9+2.2 to 41.7+22.7 мg/week) and then RHuEPO (8333.3+4527.7 to 8444.4+6597.6 IU/week) for another six months (period B) were dosed accordingly to keep HB levels stable (A: Hb 12.6+0.6 to 12.76+1.06 g/dl and B: 12.8+0.69 to 12.8+0.99 g/dl) using the same route. When administered doses were analyzed, equivalence by using the conversion factor was established. This was true also for the SC group but for the IV group of patients, RHuEPO weekly doses (B) were significantly less than those initially administered and calculated by g/week. Erythropoietin equivalence, by using the conversion factor, is established in our study only for the SC route. This is not the case for the IV administration, where RHuEPO dose needed was lesser than that initially calculated by the conversion factor. Higher bioavailability with thrice per week administration of RHuEPO seems to outweigh the advantages of the once per week IV Darbopoietin alpha.

Rhabdomyolysis in CAPD patient after concomitant use of simvastatin and clarithromycin

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PP

Simvastatin is an HMG-CoA reductase inhibitor. Clarithromycin is an inhibitor of cytochrome P-3A4, which is mainly responsible for simvastatin metabolism. The concomitant use of these agents inevitably leads to an elevation in plasma simvastatin levels. The present case report deals with a 68-year-old man on CAPD for 63 months, resulting from diabetic nephropathy. The patient also had a medical history of coronary artery disease for the past seven years as well as a triple by-pass surgery and dyslipidemia for the last two years and was on 20 mg of simvastatin for the past eighteen months. Clarithromycin 250 mg twice a day was prescribed due to an upper respiratory tract infection. Two days after the introduction of antibiotics he started experiencing proximal muscle weakness and myalgia but he ascribed it to the infection and kept on with the medication for another three days. At that time he was transferred to hospital with generalized muscle weakness, lower limb myalgia, difficulty in walking, dizziness and anouria. Neurological examination revealed grade 3/5 upper limb and 4/5 lower limb proximal muscle weakness and diffuse muscular tenderness with diminished tendon reflexes. Initial serum CK was 15000 U/L and serum LDH 3915U/L, which peaked at 52000 U/L and 4890 U/L respectively within three days. The rest of the parameters on admission's day was: serum urea: 275 mg/dl, serum creatinine: 11 mg/dl, K: 6.4 mEq/L, Na: 142 mEq/L, Ca: 1.2 mEq/L, P: 8.9 mEq/L, SGOT: 518 U/L, SGPT: 772 U/L, γ-GT: 276 U/L, ALP: 173 U/L. Simvastatin and clarithromycin were discontinued immediately and clearance dosage was increased. Within five days all symptoms abated and fifteen days after the onset of the problem the patients' laboratory parameters returned to baseline. Two months after the incident simvastatin therapy was reintroduced and is being given till present with no problem at all. The concomitant use of macrolides and HMG CoA reductase inhibitors should be avoided, especially in the setting of renal failure because the risk of rhabdomyolysis is great. If concomitant use is considered necessary, dosage reduction of both medications is essential.

Effect of dialysate calcium concentration on hemodialysis efficiency

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PP

Aim: To detect any difference in dialysis efficiency by switching dialysate calcium (DCa) composition from 1,75 or 1,25 mmol/l, taking into account that possible produced alterations in blood Ca concentration could induced hemodynamic changes affecting the urea (U) dead space. Patients-Methods: In 23 stable HD patients the HD efficiency was assessed (by calculating the KT/V) using the same HD conditions, apart from the DCa which was switched from 1,75 (phase A) to 1,25 mmol/L (phase B). In these patients the total urea (U), phosphorus (P) and potassium (K) in all the dialysate used was measured as well as the total and ionized Ca in the blood at the beginning (0΄), at the end (240΄) and 30΄ after HD session. Additionally, the (U) rebound was assessed, in order to detect any change in the (U) "dead" space. Results: No statistically significant differences were found between phase A and B in total U, P or K in the dialysate. Additionally, no difference was detected in Kt/V, U rebound or blood calcium (total - TCa- and ionized-Ca2+) between the above mentioned phases. There was a statistically significant increase (p<0,001) in blood calcium (TCa and Ca2+) in 240΄ and 270΄ compared to 0΄ of HD session, in phase A [TCa: 0΄: (9,5+0,7)240΄:(11,8 + 0,9), 270΄:(11,2+0,6mg/dl).Ca2+:0΄:(1,18+0,08),240΄:(1,41+0,1), 270΄:(1,37+0,68mg/dl)], but not in phase B [(TCa:0΄:(9,1+0,92),240΄:(9,6+0,8),270΄:(9,5+0,83mg/dl),Ca2+:0΄:(1,15+0,1),240΄:(1,18+0,08),270΄:(1,18+0,08mg/dl)]. It should also be pointed out that in phase A, but not in phase B, there was a correlation between the magnitude of

increase of blood calcium and total (U) dialysate (p<0,05). Conclusions: The switch in DCa from 1,75 to 1,25 mmol/l during a HD session did not produce any change in dialysis efficiency, despite the detected change in blood calcium concentration and the hemodynamic alterations which may induced by the latter.

Initial (non) functioning of haemodialysis fistulae

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PP

In the DOQI guidelines, this has led to the recommendation that AV fistulae should be the first option; however, this advice has not been followed uniformly. One impediment may be the astonishingly high rate of primary failures of AV fistulae, up to 50% in some centers. The aim of the work was to identify possible factors that have influence on initial (non) functioning of haemodialysis fistulae. In all examined patients, we analysed laboratory parameters, demographic structure and etiology of renal disease. By monitoring, arterial and blood pressures were intraoperatively controlled and the diameter of the vessels used for anastomosis was measured. This study involved 85 patients (57 male (67%) and 28 female (33%); mean age 59,6+13) in Department of Nephrology in Hospital Center in Kragujevac. In all patients, 145 primary and secondary interventions were performed. Initial functioning fistulas were confirmed in 61 patients (71,8%) and non-functioning fistulas were found in 24 patients (28,2%). Regarding the sex structure, male were predominant (67%) compared to female (33%). Patients with functioning fistulae were mean age of 58±13 years and 62% of patients were younger than 60 years. The group with non-functioning fistulae was mean age of 63±13 years and 75% of patients were older than 60 years. According to the etiology of renal insufficiency, hypertensive nephropathy and glomerular disease are the most frequent in patients with functioning fistulae. In patients with non-functioning fistulae, the opstructive uropathy was a dominant etiologic category. There were statistically significant differences in sedimentation speed (66,46+37,4 vs.83,6+31,4; p=0,027) and values of diastolic arterial pressure (81+15,27 vs. 75+12,4 mmHg; p=0,039) between patients with functioning fistulae and those who had initial non-functioning fistulae.

Plasma d-dimers & fibrinogen as markers of cardiovascular disease (CVD) in PTS on HD

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Either Poster or Oral

To study the relation of D-dimers (PD) and fibrinogen (PF) levels with CVD in pts with end-stage renal disease (ESRD) on chronic haemodialysis (HD). Methods. We studied 71 pts with ESRD (43 males, mean age 65+11 years), stabilized on HD (mean duration 54 months, range 6-210). 14 pts (20%) had diabetes mellitus (DM) and 22 pts (31%) had a history of documented CVD (16 males, mean age 70+6 years). Automated latex enhanced immunoassay was used for the quantitative determination of PD in citrated plasma. PF concentration in citrated plasma was determined with the use of the Clauss method. All samples were collected in the morning of a midweek routine dialysis day. Plasma concentrations of PD and PF were assessed in relation to CVD, duration of HD (months), DM, age and sex. Student's t-test, linear and logistic regression analysis were used for the statistical analysis of the parameters (mean+SD). Results. PD and PF were significantly higher in pts with CVD compared to pts without CVD (337.9+81.7 vs 317.8+80.0mg/dL, p<0.001 and 595.7+387.0 vs 313.9+108.1ng/mL, p<0.001, respectively). PD and PF were higher in pts with DM compared to others (445.9+268.7 vs 424.6+301.2mg/dL, p<0.001, and 337.7+62.4 vs 322.6+85.1ng/mL, p<0.001, respectively). PD exhibited a significant positive correlation with the age of the pts and CVD (R=0.431, P<0.001, and R=0.489, P<0.001, respectively) and a significant negative correlation with the HD duration (R=0.296, P<0.001). PF appeared a more weak correlation to the age and CVD (R=0.04, P<0.001 and R=0.07, P<0.001 respectively). PF also exhibited a weaker, compared to PD, negative correlation with the HD duration (R=0.04, P<0.001). Conclusions. PD and PF are found to be significantly higher in pts with CVD on HD. PD exhibited a parallel pattern with PF, but a more significant correlation with CVD compared to PF. This might be of prognostic significance in this patient population.

Effects of oral L-carnitine administration in haemodialyzed patients

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PP

Carnitine deficiency is common in chronic haemodialyzed patients. Favourable effects of intravenously L-carnitine supplementation are well recognized, while the role of the orally-administered form is still under debate. Since there is

a limited experience with oral L-carnitine and there are no clear recommendations in this field, we intended to evaluate the effects of L-carnitine orally administrated for 6 months on the responsiveness of anaemia to Epo, on the lipid metabolism and on the nutritional status in haemodialyzed patients. 40 stable patients undergoing chronic haemodialysis for at least 6 months, with haemoglobin (Hb) level below 10.5g/dL, despite regular administration of Epo (106.8+35.4IU/kg/week), without iron deficiency or known causes of Epo hyporesponsiveness were enrolled and randomly assigned in two groups. The carnitine group (20 patients) received L-carnitine, 6g/day orally, after the haemodialysis session and the control group (20 patients) did not. The schedule of Epo and iron therapy as well as the follow-up were continued in both groups, according to the European Best Practice Guidelines for the Treatment of Anaemia. Red blood cells and iron status (haemoglobin, haematocrit, serum ferritin, transferrin saturation), Epo and iron dose, lipid (total serum cholesterol. serum triglycerides, LDL-cholesterol, HDL-cholesterol) and nutritional status (antropomethric and biochemical parameters), as well as the inflammatory parameters (C reactive protein) were periodically assessed. There were no significant differences between groups in any of the parameters at the initiation of the study. The mean haemoglobin level increased (8.6+0.9 vs 10.2+0.9g/dL, p<0.001) only in carnitine-treated patients and the percentual increase of haemoglobin was higher in the same group (18.7% vs. 11.7%, p= 0.005). A greater percentage of patients receiving carnitine achieved the target haemoglobin after six months (60 vs. 27%, p=0.005). There were no significant differences between groups in the mean time to reach the target hemoglobin. The mean weekly erythropoietin dose used to achieve the response was smaller in patients treated with carnitine, but the difference was not significant (106.7+33.9 vs 119.5+36.3IU/kg/week). Epo resistance index decreased with 18.2% in the carnitine group vs 11.1% in the control group, but the difference did not reach statistical significance. No significant variations in serum ferritin were noted after 6 months in either group of patients. In carnitine treated patients, LDL cholesterol decreased (93.7+19.7 vs. 78.8+23.1 mg/dL, p<0.05) and serum albumin increased. At six months, there were no significant changes in global or subjective parameters of the nutritional status, but serum albumin significantly increased (4.2+0.3 vs. 4.4+0.3g/dL, p<0.001) only in patients receiving L-carnitine. In haemodialyzed patients, oral L-carnitine supplementation seems to improve the response of anemia to Epo, to ameliorate the lipid profile (LDL-cholesterol reduction) and the nutritional status (increase of serum albumin).

Positive effect of vitamin D in hepatitis B (HBV) vaccination outcome in elderly hemodialysis (HD) patients

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PP

HBV vaccination is the gold standard to prevent HBV spread in hemodialysis units where a low seroconversion rate has been reported. Furthemore, in the elderly even lower rate has been reported. The aim of the study was to evaluate the effectiveness of an enhanced vaccination program in a group of elderly, taking into account concurrent medication. Twenty-three HD patients, older than 65 years with a mean age 71±4 years and mean HD duration 41±44 months, were vaccinated. Four doses of 40 micrograms, of recombinant hepatitis B vaccine (Engerix) were administered at 0,1,2,6 months. Anti-HBs antibodies were evaluated one month after the last dose. Seroconversion was considered in patients with anti-HBs ≥ 10 iu/l. Sixteen of the 23 patients seroconverted (70%). The response was not correlated with age, sex, HD duration, serum albumin, or iron status as it is reflected by serum ferritin or transferrin saturation (mean values of three measurements during the six months of the vaccination). 22/23 patients were treated by erythropoietin and the proportion of patients was not statistically different between responders and non-responders. Half of the patients who seroconverted were receiving vitamin D (50%), while none of the seven non-responders was taken a Vit-D analogue (p<0,05). In conclusion, the enhanced vaccination schedule was satisfactory in the elderly HD patients. Vitamin D administration might have a positive immunoregulatory role in the response to HBV vaccination.

Maintenance iron dose in hemodialysis (HD) patients treated by erythropoietin (EPO)

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PP

Iron is required to be administered intravenously (iv) in most patients treated with EPO. However, the maintenance iron dose has not been exactly determined. The aim of our study was the long-term evaluation of an iv iron dose on the iron status in our patients treated by EPO. We prospectively

studied 64 HD patients who had serum ferritin (SF) between 100 and 800 μg/l and transferrin saturation (TSAT) >20%. All the patients were treated by stable EPO dose two months before entering the study. Twenty-nine patients were excluded from the study for variable reasons (4 died, 1 transplanted, 5 had gastrointestinal hemorrhage, 1 had gross hematuria, in 3 malignancy was diagnosed and 16 suffered from an infection episode during the observation period). Thirty-five patients remained for evaluation. Their mean age was 65±9 years and their HD duration was 55±61 months. Iron dextran, 100 mg per 14 days was administered for 12 months. At start and every three months, blood was drawn for Hb, MCV, TSAT and SF. During the study the patients were followed-up and we recorded when they became iron depleted or overloaded (SF<100 or >800 μg/l, respectively). None of the patient was found to have SF<100μg/l throughout the study. Fifteen patients had SF >800μg/l (43%), four at 3 months, 1 at six months, 7 the third trimester and 3 at the end of the study. Iron overloaded patients were older (68.6+7 vs. 62.7+10 years, $p<0.05$) and had higher SF at the start of the study (522+147 vs. 293+141, $p<0.05$). Hb and TSAT did not change in twenty patients who were not overloaded, while serum ferritin increased significantly (292+144 vs. 434+172, $p<0.05$). EPO dose did not change significantly during the study. In conclusion, the dose of 100 mg of iron dextran, administered iv every two weeks as a maintenance dose in HD patients treated by EPO, is sufficient to maintain the patients iron repleted, but almost half of them, especially the elderly, could become iron overloaded.

Recombinant human erythropoietin - Recormon® in chronic hemodialysis patients

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PP

The introduction of recombinant human erythropoietin (r-HuEPO) demonstrated successful treatment of anemia in chronic hemodialysis patients. The hemoglobin level below 11 g/dL serves as an indicator for initiating r-HuEPO treatment for hemodialysis patients. It was our aim to assess the effects and undesirable effects of r-HuEPO use in dialysis patients. Since January till December 2004 year, a prospective study was undertaken in Militay Hospital, Skopje. Forty chronic hemodialysis patients with normocytic and normochromic anemia, were enrolled as study patients. Therapy with recombinant human erythropoietin - epoetin beta (RecormonR - Roche Diagnostics GmbH, Mannheim, Germany) was initiated at an initial dosage of 20 IE/Kg, three times a week. Recormon was administered subcutaneously at the end of the dialysis. At the beginning of the therapy complete red blood cell count, serum ferritin and serum EPO were measured once weekly. Thereafter, levels were monitored once a month. Also, undesirable effects, hypertensive reactions, thrombosis of AV fistula and appearance of severe anemia, were noted. In case of unsatisfactory response in Hg levels, the dose was raised by additional dose of 20 IE/kg. Wicoxon Matced Pairs test was used to test the differences between Er, Hb, serum ferritin and EPO at the beginning and 12 months later. At study end we noted significant improvement of the level of erythrocytes, hemoglobin and endogenous EPO. We also noted higer level of serum ferritin, but not enough to conclude it as statistically significant. The changes of platelet count showed also no significance. Hypertensive reactions were recorded in 10% and needle's coagulation in 20% of patients. Treatment with recombinant human erythropoietin (r-Hu EPO) in dialysis patients has shown to be highly effective in correcting anemia and improving quality of life.

Maintanance iron dose in hemodialysis (HD) patients with relatively high serum ferritin, treated by erythropoietin (EPO)

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PP

Most HD patients treated by EPO, require intravenous (iv) iron in the presence of either high serum ferritin (SF) or inflammation which may aggrevate oxidative stress and contribute to aggrevation of the cardiovascular burden. The maintenance dose of iv iron, greatly vary from 25-125 mg/wk. Although it has been suggested to withhold iv iron when serum ferritin (SF) and transferin saturation (TSAT) increase above 800 μg/l and 50% respectively, there is no convincing evidence to suggest a trheshold SF beyond which iv iron therapy could harm instead of benefiting the patients. The aim of the study was to assess the administration of a maintenance iron dose in patients with SF over 500 μg/l and its effect on the iron status. We prospectively followed 80 HD patients treated by EPO and had SF between 100 and 500μg/l. Iron dextran, 100 mg, was administered every two weeks. SF and TSAT were measured every three months. Inclusion criteria for study entry was SF >500μg/l and exclusion criteria were infection, hospitalization and history of transfusion the previous three months or during the study period which lasted six months. None suffered from malignancy or other hematologic disease. Twenty-five patients were eligible and completed the study. Their mean age was 68±8 years and the mean HD duration was 72±67 months. At 3 months, after the first

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recorded SF > 500µg/l, 3 out of 25 patients had SF >800µg/l and iron was stopped. At 6 months, 7 of the remaining 22 patients were iron overloaded. In total, 10 of the 25 patients were iron overloaded at 6 months of the observation period (40%). SF <100 µg/l was not recorded in any patient during the study. TSAT >50% was also not recorded in anyone who was not overloaded with iron. Hemoglobin and EPO dose did not change significantly during the study. SF levels increased significantly in the 22 patients, at 6 months (565+61 vs 680+190 µg/l, p<0,05). HD duration, SF and TSAT at the study entry was not different between patients who overloaded and those who did not while patients who became iron overloaded were older than those who did not (73+5 vs 65+9, p<0,05). In conclusion, maintenance iron dextran dose of 100mg iv, every two weeks, is sufficient in HD patients treated by EPO to avoid iron deficiency, but should be reconsidered in patients with SF>500ng/ml, particularly in elderly who are prone to become overloaded, more easily.

The significance of short daily hemodialysis for survival of patients with renal failure and severe heart failure

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PP

Severe cardiac insufficiency together with renal insufficiency demanding dialysis support represents life threatening disorder. Factors for the patient survival that were undergone on short daily hemodialysis program because of either deep acute renal insufficiency (38.7%) or deterioration of CRF (12.9%) or in patients previously regularly dialyzed 3 times a week (48.4%) all together with chronic heart failure (CHF) were investigated. The NYHA II-IV heart failure was precipitated by aggressive vascular surgery of abdominal aneurism rupture or coronary disease, which aggravated in uremia (61.3%). MOFS was not induced by infection (sepsis). In a group of 31 patients (25 M, 6 F) aged 53.8+-2.4 years (range 28-75, median 63) admitted during 2003, the survival rate was 64.5% in 15.1+/-1.9 (2-44) hospital days. Different clinical and HD parameters have been monitoring and compared with patient survival by Cox regression model and the variance analysis was done by the model of GLM repeated measures. Factors that nonpredicted patient survival were as follows: age (p=0.066), sex, CRF, uremia, previous regular hemodialysis, coronary disease, aggressive vascular surgery, breathless, mechanical ventilation, edemas, systolic pressure, nephrotoxic antibiotics, as well as the levels of serum creatinine, total proteins, albumin, blood hemoglobin and diuresis at the onset of intense dialysis program. Significant risks for patient survival were ARF [R= 4.45 (1.26-15.67); p=0.020]; and hypotension during hemodialysis (p=0.046); while favorable factors were the total hours of daily HD [R= 0.65(0.5-0.862); p= 0.002]; HD flow rate [R= 0.989 (0.979-0.99); p=0.027]; and mean HD UF [R= 0.99 (0.998-1); p=0.032]. Multivariate analysis separated ARF (p=0.020) and ARF with uremia (p=0.025) among worse clinical parameters, and less total HD hours (p=0.008) and (low) diastolic pressure on 7th HD day (p=0.001). The test of GLM repeated measures indicated that sustained propensity of diuresis failing (p=0.018) in 7 daily HDs compared to diuresis a week before HD onset as well as the diastolic pressure decrease (p=0.011) in 7 HD days were suggestive for nonsurvivors (F=6.89; p=0.003). In conclusion, in patients with MOFS not induced by sepsis, profound acute renal failure with heart failure in advanced myocardiopathy represents a risk of patient death. Short daily HD may improve survival in patients with ARF and/or CRF and severe chronic heart failure.

Continuous convective renal replacement system: a new modality of wearable artificial kidney

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PP

Chronic Renal Failure is an increasingly prevalent problem. None of the available renal replacement therapies (RRT) is considered ideal. Hemodialysis (the most popular treatment for renal failure) consumes about 12 to 15 hours weekly of the patient's life, the blood purification level is not equal all the times due to the interrupted nature of the procedure. Continuous Ambulatory Peritoneal dialysis is a more convenient method but it needs special kind of intellectual and well educated patients in order to reduce the frequency of peritonitis episodes. Haemofiltration has been developing during the last three decades as a possible alternative to the haemodialysis treatment, but as far we don't have any hard endpoint data to advice on the role of haemofiltration. Continuous Hemofiltration is now used very successfuly in some cases of anuric acute renal failure as well as some edematous conditions refractory to pharmacologic treatments. The main differences between the efficiency of hemodialysis and hemofiltration lies in the fact that hemodialysis depends on the physical phenomenon of diffusion (Diffusive transport) while haemofiltration depends on convective transport of water and its contents. The idea of designing a wearable model of artificial kidneys

has been tried by many nephrologists. Nothing was found to be convenient due to different reasons. These reasons include the huge amounts of hemofiltration and consequently the the big amounts of replacement fluids. Other inconveniences like the volume of the design, the wait, the vascular access, the appropriate anticoagulation etc made the realization of such a design not feasible. We introduce here our view about a new system design of wearable artificial kidney which can overcome most of the difficulties of the precedent generations. We call the procedure "Continnuous Convective Renal Replacement Therapy CCRR". Haemofiltration, being superior to haemodialysis in its efficacy, could not be applied as an alternative for chronic renal failure treatment, due to the huge amounts of highly purified fluid and electrolytes replacement needed to be infused intravascularly. We present here our suggested innovation which could overcome all the inconveniences of both haemodialysis and haemofiltration. It is a continuous, wearable, disposable renal replacement therapy system, depending on convective elimination of water and nitrogenous waiste products, which can be used as a long-term treatment of chronic renal failure. The Continuous Convective Renal Replacement system is designed in the form of a tight jacket or belt to be worn by the patient. The material of the jacket can be any solid, light, leathery non-allergic substance or tissue with a small built-in haemofilter. The replacement fluid is to be given orally to the patient. Sachets containing salts, replacement materials, vitamins and sugar are to be prepared. Different formulae of these sachets are to be prepared according to the nature of the most common clinical presentations. Anticoagulation could be achieved either by an oral anticoagulant (Coumadine) with adjustment of PT and INR; or low molecular weight heparin (Clexan) in a prophylactic 12 hourly dose. More details about the blood lines, vascular access, etc, are described in the full text.

Thrombotic markers in patients on different hemodialysis membranes

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PP

The patients on hemodialysis (HD) suffer from permanent hyperthrombotic condition. The aim of the study was to estimate thrombotic markers in HD patients regarding different HD membranes. The biological activity of von Willebrand factor (vWf) was determined in 104 patients (64 males, 40 females, at age of 42±12 years) using the platelet aggregation in presence of ristocetin (Dade Behring, Germany) on different HD membranes: Cuprophane (n=30), Polymetilmatacrilat (PMMA) (n=30), Hemofan (n=24) and Polysulphon (PS) (n=20). Fibrinolysis activators (routine method with standardized fibrin plates) and prothrombin time (PT) (Dade Behring, Germany) were examined in 43 patients (28 males and 15 females at age of 40± 9 years) who were on: Hemofan (n=24) and Polysulphone (n=19). In 40 patients (25 males and 15 females at age of 41±11 years) who were on Hemofan (n=17), polysulphone (PS) (n=11) and Curophane (n=12), nitric oxide (NO) level was examined (OXIS, USA). Patients' groups were compared to 30 healthy control subjects who were age and sex matched. The biological activity of vWf showed increased values even before the HD in all examined groups with further increment after HD. The most significant increment of vWf activity was noticed in the patients on PMMA membrane, 128+32% before, vs. 234+28% after HD ($p<0.001$). Not statistical increased of vWf activity was noticed in patients on PS membrane, 133+31% before, vs. 140+30% after HD. PT was significantly shortened after HD in patients on the two examined membranes, for Hemophane membrane from 10+1.9 to 9+0.6 seconds, for PS from 10+0.7 to 8.9+ 0.6 seconds ($p<0.05$) Compared to controls, PT was also shortened in HD patients before the HD. There was no significant difference in fibrinolytic response between patient' groups and controls, without any difference between its level before and after HD. No statistical significance for NO was found before and after the HD session in none of patients groups on different HD membranes, but the patient's value was much higher than the control ones ($p<0.001$). From the obtained results we can conclude that there is hemostasis activation in HD patients. Besides the other examined membranes, the best membrane profile was PS type because smaller changes of the examined parameters after HD were found.

Morbidity and mortality rate in patients during 15 years experience of the haemodialysis center in Tetovo: follow-up study

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PP

The aim of this study was to present the structure and follow-up of the morbidity and mortality rate of the patients in end-stage renal failure (ERF), treated with intermittent hemodialysis (IH) in the Hemodialysis Center in Tetovo during the period of 15 years. Between 1989 and 2004, a total number of 101.932 hemodialysis (HD) were performed, with 566.3 per month. The annual average was 5796 HD. The predominat age group was between 50-59 years of age, followed by the group of patients >60 years and 40-50 years of age. There were 48% males and 52% females. According to the etiology, the major causes for end-stage renal failure in the first year after opening the Dialysis center were: glomerulopathy 11 (25%),

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interstitiopathy 10 (22%), tuberculosis of the kidney and lupus nephritis 1 (0.05%). Nowdays, the primary causes are: glomerulopathy 19 (27.9%), diabetic nephropathy 12 (17.6%), interstitiopathy 9 (13.2%), polycistic renal diseases of adults 8 (11.6%). Not differentiated 8 (11.6%), uro-obstructive nephropathy 2 (2.9%), tuberculosis of the kidney 2 (2.9%) and other diseases 7 (10.2%). The annual mortality rate for the last five years was 11.7%. The mortality rate under HD treatment was: for the first five years 69 (1%), between 5-10 years 23.5%, between 10-15 years 5.8% and >15 years 2.9%. In 24 of our patients, transplantation of the kidney was performed successfuly, while in the future we expect four more surgery performance. This is the predominant occupation in the following period as the improvement of the conditions and quality of the treated HD patients will improve and provide better rehabilitation and long-term outcome of these patients.

Influence of inflammation on nutritional status of dialysis patients

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PP

Malnutrition and inflammation are common phenomena in maintenance hemodialysis (MHD) patients and a risk factor for poor quality of life and increased morbidity and mortality. Inflammation stimulates ubiquitin-mediated proteolysis of muscle and also causes decreased albumin synthetic rate with a consequence of reduced albumin concentration. The aim of our study was to evaluate the influence of inflammation on parameters of nutritional status of MHD patients. To explore the effects of C reactive protein (CRP) on parameters of nutritional status, we analyzed 154 MHD patients (93 men and 61 women) in a period of six consecutive months. The mean age of all patients was 54.8 ± 12.7 years and vintage (duration of dialysis therapy) from 7 to 288 months. The indicator of inflammation, CRP was measured monthly at the central laboratory by nephelometry. The following parameters of nutritional status in MHD patients were measured: serum albumin and cholesterol level, mid-arm circumference (MAC), mid-arm muscle circumference (MAMC), triceps skin fold thickness (TSF) and body mass index (BMI). Protein intake of MHD patients was assessed by measuring protein catabolic rate (PCR). Student's t-test was used for group mean comparison between men and women. Person's correlation r was used to determine the significance and strength of associations. Our results showed that CRP level was significantly greater in men than in women (12.9 vs. 7.97, $p < 0.04$). Serum albumin level was significantly greater in men than in women (40.2 vs. 38.8, $p < 0.02$). Serum cholesterol level was greater in men than in women, but it was not significant. Triceps skin-fold measurements were statistically greater in women than in men (1.37 vs. 0.96, $p<0.000001$). Mid-arm circumference and body mass index were greater in women, whereas mid arm muscle circumference was greater in men, but it was not statistical. CRP level showed strong correlation only with serum concentration of cholesterol ($r =0.49$, $p<0.000$), and did not correlate with serum albumin level and anthropometrical parameters of MHD patients in our study. The average value of protein catabolic rate (PCR) of the patients in our study was 1.01 ± 0.17 g/kg/d, value that showed adequate protein intake. We can conclude that inflammation and reduced protein intake, each separately are contributing to a decrease in a serum albumin concentration and anthropometrical parameters, but the adequate nutrition could blunt the influence of inflammation on parameters of nutritional status.

Critical evaluation of different approaches for oxidative stress estimation in patients with chronic renal failure on maintenance hemodialysis

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PP

During the last decade different approaches for evaluation of oxidative stress in patients with chronic renal failure on maintenance hemodialysis (HD) have been applied at the Biochemistry Department and Clinics of Nephrology and Hemodialysis. They included determination of endogenous antioxidants content, measurement of reactive oxidation metabolites and end products of lipid peroxidation at different stages of the HD procedure. Numerous parameters have been measured in plasma and red blood cells, such as diene conjugates, vitamin E, lipid hydroperoxides, malone dialdehyde, and protein thiols content, total antioxidant capacity and superoxide dismutase activity. This work critically examines methods used to evaluate oxidative stress in patients on HD and identifies as most reliable methods in that therapeutic approach. The emphasis is on the caution that is needed in applying these approaches and assays in view of possible errors in interpreting the results due to the supplementing antioxidant therapy of those patients. The applicability of some of the reviewed methods in routine clinical laboratory practice is evaluated.

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Serum C-reactive protein and procalcitonin do not correlate in hemodialysis patients

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PP

Serum C-reactive protein (CRP) is acute phase reactant strongly associated with cardiovascular and general morbidity and mortality in the general population, as well as in patients with end-stage renal failure treated with hemodialysis (HD). CRP concentration of 3,0 mg/l represents the 90'Th percentile value for adult healthy population. Moderately higher levels of CRP are associated with chronic inflammation including bio(in)compatibility of HD procedure and chronic infections. Procalcitonin (PCT) levels rise in response to acute mainly bacterial infections. Whether chronic sub clinical infection and inflammation is also accompanied by a rise in serum PCT is less clear. It seems that in chronic HD patients PCT is often slightly higher than normal and a cut-off value of 1,5 mg/l was proposed to distinguish acute infection in HD patients. We investigated the relationship between serum CRP and PCT levels in 63 chronic HD patients (mean age, 61,3±12,1 years; duration of HD 10,5±14,3 years). In 8 of them, CRP was markedly higher than in the others because of intercurrent infections, chronic inflammatory disease or malignancy. These patients had highly significantly lower albumin, lower urea and creatinine and insignificantly higher total protein than the others but there was no significant difference in PCT (Table 1). These patients were excluded from further analysis. Of the remaining 55 who had no clinical signs of infection or other known source of inflammation, only 11 had CRP in the normal range (defined as ≤3 mg/l). In 44 patients CRP was higher than normal. These patients also had higher PCT but the difference was not statistically significant (Table 2). Both CRP and PCT showed weak positive correlation to albumin and creatinine in both groups. PCT levels were not assessed in 6 patients. CRP was no higher in 30 patients with elevated PCT (>0,5mg/l) than in 19 with normal PCT. In 22 patients both CRP and PCT were higher than normal (CRP 6,87 mg/l and PCT 1,41mg/l) but there was no significant correlation between the two (r=0,263, NS). In 7 patients, PCT exceeded 1,5 mg/l (avg. 2,66 mg/l) but CRP was only slightly higher (avg. 6,23 mg/l) than in the others. Within the above groups, there was no correlation between CRP and PCT levels. In conclusion, we did not find a significant relationship between CRP and PCT levels in our HD patients. CRP levels are slightly higher than normal in the majority of them. In more than a third both CRP and PCT are higher. We conclude that some evidence of chronic inflammation is present in the majority of HD patients as judged from the elevation of inflammatory markers even in stable patients without signs of infection or inflammation (Table 1). Comparison of CRP, PCT, creatinine and albumin in HD patients with and without signs of inflammation CRP PCT Creat Albumin Total n=63 Stable n=55 7,07 0,87 867 43,7 Inflammation n= 8 46,04 1,06 724 39,0 T - test (p) <0,0001 0,63 <0,01 <0,0001 Table 2. CRP, PCT, creatinine and albumin in HD patients without signs of inflammation (Total n=55)

	CRP	PCT	Creat	Albumin
CRP<3 n=11	2,41	0,65	847	44,5
CRP>3 n=44	6,38	0,93	871	43,5
T - test (p)	(<0,03)	0,46	0,63	0,21
PCT known n=49				
PCT<0,5 n=19	5,60	0,32	816	43,6
PCT>0,5 n=30	5,67	1,22	891	44,0
T - test (p)	0,93	(0,003)	0,09	0,53
CRP<3: n=11	2,41	0,65	847	44,5
CRP>3: n=38	6,48	0,93	870	43,6
T - test (p)	(<0,001)	0,46	0,67	0,30

Evaluation of adequacy of hemodialysis in HD patients

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PP

The adequacy of hemodialysis in patients on chronic dialysis is an important criterion for the quality of life and duration of survival. From a point of view of adequcy of HD, KT/V is a significant parameter for monitoring technical efficiency on HD individual patient. We examined 100 pts on chronic hemodialysis program in duration of one year. Evaluation was made in relation to sex, age, duration of dialysis treatment, years on dialysis, dialysis regime, type of dialyser and KT/V. Urea kinetic method was used in pre-dialysed and post- dialysed BUN of the second HD during a week, with regime of three dialyses per week. In 40 pts we used Polyflux 1.4, 20 pts - Polyflux 1.7, 20 pts- Asahi 650 HM-Bio, 20 pts Asahi 750 HM Bio. As an effective clearence of the dialyser we used the in vitro clearence recommended by manufacturer. This study has shown that from the total examined 100 pts, 39 or 39% had inadequate KT/V < 1.2. Patients with longer duration of dialysis treatment had better KT/V. Patients with BMI above 25 had worse KT/V which has been estimated in other studies, too. In conclusion, we should continue duration of dialysis treatment and membranes with higher surface should be used.

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Bone mineral density in female haemodialysis patients

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PP

Women on dialysis can have an increased risk for renal bone disease and postmenopausal osteoporosis. The aim of our study was to evaluate bone mineral density in a group of haemodialysed women with persisting ammenorrhea and compared to similar women with regular menstruation. We studied 46 women who were divided in two groups - the first group consisted of 36 women with persisting amenorrhea, defined as the absence of menstrual bleeding for more then six months; the second group consisted of 10 women with regular menstruation. Bone mineral density (BMD) performed in ten patients with normal menstrual cycles, and 15 female patients with amenorrhea. Different biochemical paramenters were evaluated, such as intact PTH μIU/ml, Ca, phosphorus, sexual hormones as prolactin, FSH (IU/l), LH (IU/L), β-estradiol (pmol/L) and alkaline phosphatase. The level of serum calcium, phosphorus and PTH were similar in both groups. Serum alkaline phosphatase was higher in amenorhheic women (111.2+96.4), $p<0.001$. The analysis of hormone levels demonstrated lower level of estradiol ($p<0.001$) and higher FSH ($p<0.001$) in the amenorrheic group when compared to the normal menstruating women. The prolactine level was similar in both groups. BMD at the lumbal spine was significantly lower in the amenorrheic group compared to menstruating women (0.669+0.11 g/cm2 vs. 0.997+0.16), $p<0.002$. Lumbal spine BMD and total estradiol levels correlated significantly in the amenorhheic group. Our study showed that amenorrheic dialysis women had lower level of trabecular BMD compared to menstruating women on dialysis.

Comparision of duration and complications of temporary vascular access for hemodialysis

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PP

Femoral, Jugular and rarely Subclavia catheters are often used as temporary access for hemodialysis. Femoral catheter insertion is easy and save usually for a short period of time. We planned to investigate the duration and complications of dialysis catheters. We inserted 99 catheters to 88 patients for a period of 3 months: femoral - 76, jugular - 8, subclavia - 15. There were 55 female pts, 44 male, mean age - 20 to 81 years. Mean duration of catheter indwelling was 45 ± 17 for femoral catheters, 60 ± 22 for subclavia catheters, 65 ± 17 for jugular catheters. Catheter infections were diagnosed in 15 femoral catheters during a mean time of 15 ± 17 days. All infections were treated with antibiotics. Two catheters were removed. In femoral catheters - 6 pts developed deep venous trombosis at a mean time 23 ± 18 days - all of them improved by catheter removal and anticoagulant treatment. For subclavia catheters, 2 of 15, developed catheter infection during a mean time 27 ± 8 days, no catheter removal was needed. For jugular catheters, 1 of 8, developed catheter infection during a mean time of 11 ± 4 days, we have to remove because of the positive blood culture. There was no significant diference between three groups regarding catheter infections ($p > 0.05$). Our study has shown that due to the similar rate of infection and mean duration of as long as 6 weeks, femoral catheter placement can be used as a safe and practical method.

Assessment of arterial stiffness in end-stage renal disease (ESRD) patients on haemodialysis (HD)

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PP

Increased arterial stiffness is a strong predictor of cardiovascular morbidity and mortality in HD patients. The aim of our study was to assess the arterial stiffness in stable HD patients, its possible relationship with other factors and the effect of a single HD session on pulse wave velocity in large arteries by measuring Stiffness Index (SI) and vascular tone characteristics by measuring the Reflection Index (RI), with the use of the method of photoplethysmography (Pulse Trace PCA device; Micro Medical, Rochester, Kent, United Kingdom). In this cross-sectional study entered forty-nine stable HD patients (30 male, 14 diabetic), with mean age 67 ±10 years and mean HD duration 63 ± 62 months, undergoing HD for at least 3 months. Laboratory (Hb, albumin, LDL-cholesterol, calcium, phosphorus, CRP, iPTH, fibrinogen) along with HD session's data (blood pressure-systolic, diastolic, mean, pulse pressure, body weight, UF as percentage of body weight) were recorded during the middle-week, scheduled HD session. The assessment of the SI and RI has been provided before and after the HD session. The mean predialytic SI was 10.9 ± 2.9 m/s (range: 5.4 - 20.5m/s) while the mean predialytic RI was 72.8 + 8.5% (range: 53 - 93%). The diabetics presented statistically higher values of SI in predialysis (12.5m/s)

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compared to the non-diabetics (10.5m/s), ($p < 0.05$). Moreover, the predialytic SI inversively correlated to HD duration ($p < 0.05$). Postdialysis, the SI and RI have not significantly altered (11.8 + 3.6m/s and 74.3 + 9.0% respectively). Despite this, it appears that young patients more often present an increase of the SI in postdialysis, compared to the elderly ($p < 0.05$), while patients with significant increase of the body weight between HD sessions (UF > 3% of the dry body weight) appear to be less profited, as they maintain statistically higher postdialytic SI ($p < 0.01$). In conclusion, the influence of a single HD session on arterial stiffness cannot be correlated or easily predicted by other parameters. Large-scale studies are needed to elucidate the effect of dialysis on vascular wall properties.

Vascular accesses in our hemodialysis unit

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PP

Vascular accesses are a very important problem in patients (pts) on chronic hemodialysis (HD). So, we analyzed 110 patients (55 men) aged between 27 and 79 (54,5+/-12,3) years who were in our dialysis center from 1 to 21 (7,2+/-5,3) years. The aim of this study was to analyze a number of vascular accesses and their dependence on age, gender, kind of renal disease and duration of hemodialysis. In all analyzed patients 204 arteriovenous fistule (AVF) (1,85+/-1,63) and 33 prosthetic grafts (polytetrafluorethylene = PTFE) (0,30+/-0,95) were created. Thirty-six patients (30%) had aneurisms of AVF. There was no correlation between age and the number of AVF. However, significant correlation between duration of HD and the number of AVF ($r=0,231$; $p<0,05$) as well as the number of aneurisms of AVF ($r=0,278$;$p<0,01$) in all analyzed patients was found. The number of PTFE was higher in women (2 vs 31) but the number of aneurisms was higher in men (21 vs 15). Significant correlation between duration of HD and the number of aneurisms ($r=342$;$p<0,05$) was found in men, while correlation between duration of HD and the number of PTFE ($r=343$;$p<0,05$) was found in women. According to age patients were divided in two groups: patients < 65 (86 pts) and > 65 (24 pts) years old. Younger patients had higher mean number of AVF and PTFE, while elderly patients had higher mean number of aneurisms. Duration of HD affected the number of AVF ($r=0,251$; $p<0,05$) in younger patients and the number of aneurisms in both younger ($r=0,308$; $p<0,05$) and elderly ($r=0,438$; $p<0,05$) patients. According to various renal diseases, patients were divided in 6 groups: glomerulonephritis (GN) (29 pts); tubulointerstitialnephritis (TIN) (23 pts); nephroangiosclerosis (Nscl) (11 pts); polycystic kidney disease (PKD) (17 pts); unknown renal disease (URD) (23 pts); diabetic nephropathy (DN) and others (7 pts). Patients with URD, TIN and DN, had the highest mean number of AVF, while patients with DN, TIN and PKD had the highest mean number of PTFE. The number of aneurisms of AVF was equal in all kidney diseases (except only one in patients with PKD). There was no correlation between duration of HD and the number of AVF and aneurisms, while correlation between age and the number of AVF was found only in patients with PKD ($r=0.555$; $p<0,05$). In conclusion, there was a significant correlation between duration of HD and the number of AVF, and the number of aneurisms of AVF in all examined patients. Women had higher number of PTFE. Younger patients had higher number of AVF and PTFE, while elderly patients had higher number of aneursms of AVF. Patients with TIN and DN had the highest number of AVF and PTFE.

Percent of body fat as a risk factor for survival of hemodialysis patients - gender difference

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PP

A number of studies have reported lower mortality in overweight hemodialysis patients since 1998. However, there are few studies that found high mortality risk in overweight patients. To investigate if the overweight is mortality risk factor in hemodialysis patients, survival analysis was done, using data of prospective cohort study performed in single dialysis unit. METHODS: The analysis included 24 months of baseline measurements and 102 months of follow-up. In a cohort of 100 anuric patients mainly on 3x4h/week schedule, who were on hemodialysis between 2 to 23 years anthropometric measurements, such as, body weight, height, mid-arm circumference, triceps, biceps, subscapular and suprailiac skinfolds were performed together with laboratory testing of transferrin, albumin, cholesterol and triglycerides, during winter season. Data obtained were used to calculate mid-arm muscle circumference, BMI and percent of body fat (%fat, DOQI guidelines). Normal intervals were: for male %fat (15-18); female %fat (20-25) (NCDS). RESULTS: 21.2% patients were underweight, 60.6% were overweight and 18.2% had normal weight when %fat was criterion. Significant inverse correlation was found between %fat and survival time in men (Spearman, $r=-0.436$; $p=0.001$), but this was not the case in women. Cox regression (stepwise) revealed different mortality risk factors for the males and females. Underweight male patients had 74.4% lower mortality

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(adjusted) to the other when %fat was criterion. CONCLUSION: Our results suggest that overweight is the risk factor in hemodialysis men but not in women considering %fat as a criterion. There was an inverse relation between %fat and survival time in men, thus underweight men had better survival than normal and overweight together.

C-reactive protein in dialysis patients

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PP

In dialysis patients C-reactive protein (CRP), a well recognized marker of inflammation predicts mortality. End stage renal disease patients and on hemodialysis patients have higher CRP levels than does the healthy population. Our aim was based on CRP levels in our hemodialysis population, to realize the clinical or subclinical inflammation and to connect these levels with other labaratory parameters. Patients-methods: we studied 45 stable patients on hemodialysis in our unit. Males were: 25/45 (56%), the mean age of the patients was: 63 (SD:11 years) and the mean duration on hemo was: 44,1 (SD: 34months). The patients were treated three times per week with bicarbonate dialysate. Plasma levels of CRP were measured by nephelometry and normal levels were identified lower than 0,8mg/dl. We divided the patients into two groups, group A with CRP levels <0,8mg/dl (normal levels) and group B with CRP>0,8mg/dl. The statistical analysis was performed using the SPSS 6.12 software program. The student t-test used for comparison of unpaired data. Mann Whitney test used for nonparametric data comparison. Student t-test used for paired data. Values of p less than 0,05 were consider significant. Results: higher levels than 0,8mg/dl measured in 14/45 (31%) patients. No significant deferences were seen between the two groups in regard with age, sex, and duration in dialysis. Diabetic patients were in higher percentage in B group (36% vs 6%). The mean CRP levels in A group was:0,1(SD:0,5)mg/dl in 1 hour,in 2th hour, 3th hour, and in the end of dialysis was:0,24 (SD:0,16,) 0,18 (SD:0,14), 0,21 (SD:0,14), 0,6 (SD:0,15)mg/dl. Mean CRP levels pre-dialysis for B group was: 2,1 (SD:2,2)mg/dl, while in 1th hour, 2th hour, 3th hour and in the end of dialysis was: 2,33 (SD:2,2), 2,19 (SD:1,73), 2,44 (SD:2,5), 2,5 (SD:2,55) mg/dl respectively. Patients in B group showed lower levels in plasma albumin, serum iron, hemoglobin and higher ferritin and leucocytes levels in comparison with the patients in A group. We did not find any sinificant between the type of membrane and the CRP value. In conclusion, CRP levels in dialysis patients are higher than the healthy population the uremic status and the renal disease itself may be the cause. There is a relationship between serum albumin and CRP levels and both are predictors of inflammation in our patients.

Cerebrovascular diseases in hemodyalisis patients in Delcevo

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PP

Aim of the study: To examine the maintainance of cerebrovascular diseases in the hemodyalisis patients in Delcevo during a period of 5 years. Materials and methods: a total of 54 patients were examined. During the examinations medical histories of the patients were used and regular internal and neurological check-ups were made as well as laboratory analysis (every month). In patients with manifested cerebrovascular disease, brain tomography (computerized) was made. Results: From 54 patients (34 men and 20 women) cerebrovascular disease was diagnosed in 18 of them (33%) - 7 women and 11 men. From the total number of patients with cerebrovascular disease (18), 5 were with hemorrhagic stroke (28%) and 13 with ischemic stroke (72%). Death was registered in 7 cases (4-hemorrhagic stroke, 3-ischemic stroke). Conclusion: The cerebrovascular disease is more maintained in hemodyalisis patients than in the rest of the population. It is clear that the ischemic strokes are more maintained than the hemorrhagic ones. The mortality from the hemorrhagic strokes is greater than from the ischemic strokes (4:3).

Nutritive status of patients in the hemodialysis centre - Delcevo

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PP

Our study aimed to estimate the nutrition status of patients on regular hemodialysis program in the Centre for hemodialysis in Delcevo. A total number of 30 patients were examined and the following data and tests were used: medical history, regular examinations for internal diseases, anthropometric examinations and laboratory-biochemical analysis (once a month). A total number of 33 patients (11 female and 22 male) were examined. The average age was 50, and the average hemodialysis period was 5 years and 11 months. According to the measured BMI (body mass index), 20 patients (60.65%) had normal food intake -14 male (63.64%) and 6 female (54.55%). Eleven patients (33.33%) were with an increased body weight, 8 (36.36%) were males and 3 (27.27%) females. There were 2 females (18.18%) with overweight of 1st degree i.e. 6.06% of the total number of patients. The percent of fat tissue in 22 patients (66.67%) was normal, in 10 patients (30.30%) it was low, and it was high in 1 patient (6.06%). Four patients

(12.12%) were diagnosed with hyperalbuminemia, and in 8 patients (24.24%) the measured PCR (protein catabolic rate) was lower than the normal. The cholesterol level in the serum of 10 patients (30.3%) was lower than the normal. Kt/V only in 3 patients (9%) was lower than 1, 2. In conclusion, the low fat tissue percent in 10 (30.30%) patients correlated with the decreased PCR and reduced cholesterol level in the serum of those patients. This group also comprised patients with lower measurements of Kt/V. The majority of patients were with normal BMI. There were no underweight patients. These results have shown that our patients do not consume nutrition products properly (more intake of carbohydrates and less protein in the food) as a result of the social-economic conditions for life of this category of patients.

Some characteristics of patients starting hemodialysis: the consequences of late referral to the nephrologists

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PP

Late referral of patients with CKD to nephrologists in the pre-dialysis period is associated with significantly high risk of morbidity and mortality. The aim of the study is to analyse some characteristics of patients starting RRT at our Institute. One-year-retrospective study has been performed, comprising a group of 40 patients with ESRD on HD. Late referral was defined if the patient was not controlled by nephrologists within 6 months prior to initiating hemodialysis. Diabetic nephropathy and hypertension as primary diagnosis accounted for 45% of the study group. The remaining were diagnosed as: obstructive nephropathy-infection (25%), not defined (25%), polycystic kidney disease (5%). More than 77,5% of the patients were older than 60 years (28 males and 12 females). The following parameters were analyzed: albumin levels (< 35 g/l - 52,5%), renal anaemia (Hb < 110 g/l - 87,5%), calcium-phosphate disorders (Pi > 1,6 mmol/l - 62,5%). Only 20% of patients were with preventive native AV fistula Cimmino. In conclusion, this analysis has shown that late referral of CKD patients to nephrologists remains a significant problem in our region with higher risks in patients' survival in the beginning of the hemodialysis treatment.

Complications of native arterio-venous fistulas in hemodialysis patients

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PP

Well-functioning vascular access with long-term maintenance in hemodialysis patients is essential for patients' survival and quality of life. The age of patients starting hemodialysis has been progressively increasing. Older age with higher co-morbidities provokes complications in AVF. AV grafts and tunneled permanent catheters are increasingly used. In a retrospective study, the various types of vascular access creation in our department have been analysed. The native AF fistula is a leading permanent vascular access at our Institute, according clinical practice guidelines: 2893 AVF. AVgraft - Gore-tex: 28. Hickman catheters: 27. Temporary catheters: Femoral : 2136, Subclavia catheters: 1048 and jugular catheters: 16. Long duration of native AV fistulas, advanced age of patients and high co-morbidities create several complications of AV fistulas in our study group. 1. Thrombosis of AVF - remains as a main complication. 2 Stenosis of AVF with decresed flow. 3. Recirculation of fistula. 4. Hyperkinetic fistulas with increased flow. 5. Aneurysms and stenoses of AVF. 6. Acute infection on the site of punction. 7. Pseudoaneurysms of a.brachialis. Long-term follow-up of vascular access and treatment of complications are essential in patients on maintenance hemodialysis.

Peritoneal dialysis-a renal replacement therapy option in elderly patients

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PP

In the past decades the pattern of end stage renal disease (ESRD) has changed, with increasing number of elderly patients admitted on dialysis. In spite of their increasing number, an optimal renal replacement method was not established. Methods: In this retrospective study we analyzed the results and the complications rates of the continous ambulatory peritoneal dialysis (CAPD) in the elderly patients followed in our Center. The study group included 27 patients (17 males, mean age 69,5±4,5 year) with a mean time on CAPD of 25,6±17 months (range 5-70 months). Results: At the end of the follow-up period, 20 patients (71.4%) were still on CAPD, 4 patients (14,3%) were transferred on haemodialysis (transfer cause being

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method failure due to multiple peritonitis), 4 patients (14,3%) died (of cardiovascular cause). Mechanical complications were seen in 2 (7.4%) patients, infectious complications appeared in 16 (59.28%) patients. The CAPD treatment was efficient in our group: mean kT/V 2.17±0.72, mean creatinine clearance 88±32 ml/min. There was a good blood pressure control and anemia has been corrected efficiently in most of these patients. Malnutrition was recorded in 2 (7.4%) patients. Patient and technique survival are showed in the table below:

CAPD duration (years) Mean (months)	1	2	3	4	5	6	
Patient survival 1995-2004 (%)	92,3	87,5	78,7	78,7	78,7	78,7	59+5
Technique survival 1995-2004 (%)	92,1	92,1	85,5	68,4	68,4	68,4	58+5

Conclusion: As showed by our data, the low complication rates, the better survival of the patient and the technique, recommend the CAPD as a optimal choice in elderly patients incident on dialysis.

Subclavia catheter as a temporary vascular access for haemodialysis

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PP

The aim of this study was to report our experiences with application and usage of subclavia catheter; to compare our experiences with the others; to gain new knowledge of the indications of placement and to determine the complications. Temporary and permanenet vascular access for H.D. are being performed at our Institute since 1984: femoral catheter – 2136; subclavia catheter – 1048; jugular catheter – 16; hickman catheter – 17; A-V fistula – 2893; Gore-tex A-V graft – 28. The subclavia catheterization is a quick, simple and comfortable method for the patient. The subclavia catheter rarely causes infections and slight debi. They are convenient for dressing and management for personal hygiene. This method can be compromised by severe complications, but with correct disposal and management they can be avoided and reduced. Our percentage of complications is in the range of the worlds' reports. Our aim: less subclavia catheters, more preventive A-V fistulas.

The effect of chronic inflammation on the nutritive status of patients treated by chronic hemodialysis

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PP

Patients with end-stage renal disease treated by chronic hemodialysis experience poorer quality of life and higher rate of morbidity and mortality compared to the general population. A number of studies indicated that malnutrition, present in 18-75% of the dialysis population, significantly correlated with the rate of morbidity and mortality. They also suggested that malnutrition in patients on dialysis was not solely caused by the low protein and calorie intake, but could also result from the state of chronic inflammation and metabolic acidosis. The aim of the study was to assess the effect of chronic inflammation on the nutritive status in a cohort of patients treated with chronic intermittent hemodialysis at our dialysis unit. One hundred and fifty four patients were assessed: 61 female and 93 male. Their mean age was 54.7 ± 12.8 years. The mean dialysis duration of the group was 84 months (range 7-288 months). They all received standard bicarbonate hemodialysis 12 hours per week, with a low-flux polysulfone membrane of 1.3m2. Single pool KT/V for the group averaged 1.2 ± 0.2, and the mean dietary protein intake was 1.07 ± 0.1 g/kg/day, as measured by the protein catabolic rate. A number of laboratory parameters were routinely monitored and among them were CRP, serum albumin and cholesterol levels. The nutritive status was assessed through the anthropometrical parameters: body mass index (BMI), triceps skin fold thickness (TSF), mid-arm muscle circumference (MAMC). The biochemical and anthropometric parameters indicative for the nutritive status of the patients revealed low normal reference values for the whole group. This was a relatively satisfactory nutritive status of our patients. As for the influence of the chronic inflammation on the nutritive status, we found a negative correlation between CRP and MAMC in both women and men, negative correlation between CRP and TSF in women, and negative correlation between CRP and serum albumin concentration. We could conclude that our group of patients on chronic hemodialysis was relatively well nourished. The state of chronic inflammation seemed to have an influence on the reduction of the skeletal muscle mass.

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Prevalence of hepatitis and human immunodeficiency virus infection in patients on maintenance hemodialysis

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PP

Chronic dialysis patients remain a high-risk group for acquiring hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus (HIV) infection. The aim of this work was investigation of the prevalence of HBV, HCV and HIV infection as well as molecular characteristics of HCV infection in a cohort of patients treated with chronic intermittent hemodialysis at our dialysis unit. The specimens used for the investigation were human sera. Some 200 sera from patients on maintenance hemodialysis were examined. The following markers were determined: anti-HCV antibodies, HBsAg, anti-HBs antibodies, anti-HBc antibodies, HIV-1 and HIV-2 antigens and antibodies. The methods used for determination were Enzyme-Linked Immunosorbent Assay (ELISA) and Enzyme-Linked Fluorescent Assay (ELFA). The methods used for determination of HCV were the commercially available Amplicor test kit (Roche Diagnostics), and the in-house developed RT/PCR method. Analysis of the HCV genotypes was performed by dot blot hybridization with the following genotype specific profiles: probe 1 (5'-CGCTCAATGCCTGGA GAT - 3'), probe 2 (5'-CACTCTATGCCCGGCCAT - 3'), and probe 3 (5'-CGC TCAATACCCAGAAAT - 3'). Serum levels of alanine aminotrasferase (ALT), aspartate aminotranferase (AST) and bilirubin were also determined in each patient. Out of the examined 200 sera, 109 (54.5%) were positive for anti-HCV antibodies; 19 (9.5%) were positive for HBsAg; 86 (43%) were positive for anti-HBs antibodies and 114 (57%) were positive for anti-HBc antibodies. Only 34 sera, (17%), were negative for the investigated markers of HBV and HCV infection. HCV and HBV co-infection was found in 9 patients. All 200 sera were negative for HIV-1 and HIV-2, both for antigens and antibodies. The results indicated a high prevalence of HCV infection among patients on hemodialysis, 96.6% being of genotype 1 and 3.4% of undetermined genotype. The prevalence of HBV infection was also significant. Over the past 30 years, we did not have a single positive patient for HIV infection in the dialysis unit. The HCV infection correlated positively with the number of blood transfusions given to the patients, and with the period of time spent on maintenance hemodialysis. The nosocomial type of transmission was probably the dominant way of HCV spread in the dialysis unit. We would advocate strict enforcement of the universal measures for infection control, and assignment of patients to different dialysis machines, depending on their viral marker positivity.

Evaluation of anthropometric parameters and nutritional indices in peritoneal dialysis patients

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PP

Nutritional status is difficult to assess in end-stage renal failure. Several markers of nutrition are available, however many of them have not been validated in the peritoneal dialysis population. Aim of this cross-sectional study was to explore the validity of anthropometric measurements in PD patients in relation to standard biochemical parameters of nutrition. Twenty-three stable CAPD patients (9 women) were included, their average age was 54±12 years and CAPD duration was 28±25 months (range 3-81). Exclusion criteria were malignant disease, chronic ar acute inflammatory disease, immunosuppressive therapy or recent (less than 3 months) peritonitis. At the regular office visit anthropometric and laboratory parameters were measured and PET was performed. Daily peritoneal glucose exposure and daily peritoneal glucose absorption were determined. Using the mid-upper arm circumference and triceps skinfold thickness (TST), the fat-free mid-upper arm surface area (FFSA) and mid-upper arm fat surface area (FSA) were calculated and normalized to 1,73 m2 body surface. Main laboratory parameters are given in the Table. FFSA showed borderline correlation (r=0,37, p=0,08) with normalized protein catabolic rate (nPCR) and no significant correlation with daily glucose exposure or absorption, protein or albumin levels. Albumin and protein levels correlated significantly positively with nPCR and significantly negative correlation was found with hypervolemia and total CO2 level. FSA showed significant correlations with Kt/V (r=0,45, p=0,03) and triglyceride level (r=0,56, p=0,006) and borderline correlation with total cholesterol (r=0,38, p=0,074). Similar results were found for TST. BMI correlated significantly with triglyceride level (r=0,45, p=0,03) and phosphate (r=0,41, p=0,05), but not with total cholesterol level. Our results show that TST or FSA are significantly associated with triglyceride levels and as such may be useful in assessing caloric over-nutrition especially as a follow-up parameter. In this study no impact of peritoneal glucose exposure or absorption could be found on protein malnutrition or caloric over-nutrition. FFSA failed to adequately relate to nPCR, however results were

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borderline and should be confirmed in a larger sample. The Table:

Main laboratory and PET parameters of included patients.

Parameter (unit)	Mean+SD	Range
Body mass index (kg/m2)	25,3+3,5	19-30,6
nPCR (g/kg/day)	0,96+0,22	0,6-1,5
Creatinine clearance (L/1,73m2/week)	75,9+17,5	51-116,1
Serum protein (g/L)	68,6+6,3	60-81
Serum albumin (g/L)	40,4+4,9	31-48
High sensitive CRP (g/dL)	3,37+4,21	0,24-13,9
Total cholesterol (mmol/L)	4,8+1,1	2,9-7,2
Serum triglycerides (mmol/L)	2,1+1,1	1-4

Seroprevalence of antibodies to herpes simplex virus 1, herpes simplex virus 2, cytomegalovirus and toxoplasma gondii in chronic hemodialysis patients

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PP

Patients on chronic hemodialysis are under risk from a variety of infections, either due to their depressed immune status, or through hemodialysis. This study is aimed to evaluate the prevalence of antibodies against HSV1, HSV2,CMV and Toxoplasma gondii in patients undergoing chronic hemodialysis. Methods: 126 patients on chronic hemodialysis (58 males and 68 females, aged between 16-79 years) and 63 healthy controls (34 females and 29 males, aged between 18-75 years) were prospectively examined. The detection of specific IgG and IgM antibodies against HSV-1, HSV-2, CMV and Toxoplasma gondii was performed by microenzyme linked immunosorbent assay (ELISA). Results: Positive IgG antibodies against HSV-1 were found in 126 hemodialysis patients (100%). IgG antibodies against HSV-1 were detected in 58 healthy controls (92%). Positive IgG antibodies against HSV-2 were found in 8 hemodialysis patients (6.3%) and in 2 controls (3%). IgG antibodies against CMV were detected in 119 patients (94.4%) and 56 controls (88.9%). Positive IgG antibodies against Toxoplasma gondii were found in 70 patients (55.6%) and 34 controls (54%). Five patients (4%) and 1 healthy control (1.6%) were IgM positive to HSV-1. Conclusions: Our data show that IgG seropositivity to HSV-2, CMV and Toxoplasma gondii seems to be equally distributed in hemodialysis patients and healthy controls. IgM seropositivity is also similar in both groups for herpes viruses, CMV and Toxoplasma gondii. IgG seropositivity to HSV-1 is found to be significantly higher in patients on chronic hemodialysis.

A single dose of enoxaparin (Clexane®) prevents intradialytic clotting and dyslipidemia during haemodialysis

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PP

Haemodyalisis is associated with extracorporeal blood flow. Anti- coagulation is required to prevent clotting of the extracorporeal circuit. Standard anticioagulation (std) has traditionally consisted of unfractionated heparin given as a bolus dose at the beginnig of dialysis follwed by a constant infusion of heparin or supplied with a mid-treatment dose. However, adverse effects of heparin include thrombocytopenia, platelet dysfunction, increased bleeding risk and lipid abnormalities. Thirty-one chronic uremic patients (18M,13F, age 67±13yr) under hemodialisis treatment for 57+35 months were studied. Out of these, 16 patients showed hypertriglyciridemia and hypercholesterolemia, even while on a dietary and pharmalogic regime of statins. There were no alterations in the remaining 15 patients. All patients were evaluated after 12 month-period of employing std heparin during each dialysis session. The second observation was undertaken after a period of the same duration employing a similar dosing of Enoxaparin and without modifying the type of dialysis, dietary behavior or pharmacologic therapy. In all patients, quarterly control values were obtained for sermum glucose, uric acid, triglycerides, cholesterol, HDL LDL,Kt/V and body mass index. During the std. heparin period, choilestrol, triglycerides and LDL were significantly increased in the 2 groups of dyslipidemic patients in comparison with the 2 groups of normolipemic patients. However, during the second period of observation, the Enoxaparin patients demonstrated a significant decrease in serum cholesterol, LDL and triglycerides. We confirm the positive effect of Enoxaparin on lipid metabolisam when compared with standard heparin sodium. Therefore, Enoxaparin in association with dietary and pharmacologic measures could find an indication for those patients with evident lipid alternations.

Risk factors for infectious complications in temporary doublelumenhaemodialysis catheters

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PP

Temporary hemodialysis catheters are important devices used in dialysis practice, but may be the source of infection in hemodialysis patients. We investigated the infectious complications in 70 hemodialysis patients using 113 hemodialysis catheters. The catheter-related bacteriaemia was 23.9%, out of which Staphylococci were the most frequent growing organism (96.3%). The risk for the development of catheter-related bacteriaemia was increased after the 24th day of catheterization. Exit-site infection was observed in one patient. The development of catheter-related bacteriaemia was increased after the 2nd venous puncture. There was a positive correlation between hypoalbuminemia and bacteriaemia. Internal jugular venous catheterization, hypoalbuminemia and diabetes mellitus were determined as risk factors for the development of catheter-related bacteriaemia. No cases were lost due to the infectious complications. The risk factors for catheter-related bacteriaemia in patients with hemodialysis catheter should be determined and modified in order to decrease infectious complications.

What changes occur by only increasing blood flow rate in haemodialysis?

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PP

Inadequate dialysis in chronic haemodialysis patients is an independent risk factor that increases mortality and morbidity in those patients. One of the factors affecting solut clearance in haemodialysis is blood flow rate. In the study, firstly dealing with venous access problems, the patients and nurses were reassured about the issue. There were 18 chronic haemodialysis patients (11 male, 7 female, mean age: 55.6±8.7 years) with low blood flow rate (mean 206±16.4 ml/min) for various reasons and their blood flow rate increased to at least 300 ml/min. After 3 months, the result compared with basal ones. Then it was found that higher haemoglobin levels were reached with lower dosage of erythropoietin. Whereas the mean haemoglobin levels of 10.18+1.02 g/dl were reached with the higher dosage of erythropoietin of 6.888+3.708 units a week at the low blood flow rate, the haemoglobin levels of 12.05+0.80 g/dl were reached with the lower dosage of erythropoietin (3055+3244 units a week) at blood flow rate of greater than 300 ml/min ($p<0.001$). It was found that the patients' appetites increased. The levels of serum albumin increased from 3.19+0.29 g/dl to 3.51+0.35 g/dl ($p<0.001$). Also urea reduction rate (URR) levels increased from 53.39 % +7.34 to 64.11 % +9.62 ($p<0.001$). An adequate venous access in which blood flow rate can reach to 300 ml/min is essential for an effective dialysis that the patient can feel better.

Prevalence of hepatitis C virus infection in dialysis patients

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PP

Hemodialysis patients are at particularly high risk for hepatitis C (HCV) virus infection because of the exposure to blood products and contaminated equipment. The high prevalence of HCV infection in dialysis patients is of great concern because these patients have a higher mortality than HCV negative patients. The aim of this study was to evaluate the prevalence of HCV infection among patients at our dialysis unit. The study was made on 178 patients (113 men and 65 women, mean age 54.8 years and mean time on dialysis 86 months). The presence of HCV antibodies was determined by second-generation assay. The presence or absence of HCV RNA in the serum of the patients was determined by reverse-transcriptase PCR (RT/PCR). From 178 patients, 114 (64%) were anti-HCV positive and 64 (36%) were anti-HCV negative. We found that anti-HCV positivity is significantly associated with dialysis duration ($p<0.00$), number of transfused blood products ($p<0.03$), and levels of liver aminotransferase enzymes ($p<0.00$), but not with the age of patients. Among 114 anti-HCV positive patients, 55 (48%) patients were HCV RNA positive and 59 (52%) patients were HCV RNA negative, underwent spontaneous viral clearance. Almost all HCV RNA positive patients were infected with HCV genotype 1 (96.4%). except two patients (3.6%) who were infected with genotype 4. There is high prevalence of HCV antibodies positive patients (64%) in our dialysis unit, with statistically significant association with dialysis duration, blood products transfusions and liver aminotransferase levels. The absence of HCV RNA at 52% of anti-HCV positive patients, indicates spontaneous clearance of the virus, suggesting that both viral and host genetic factors have impact on the outcome of HCV infection.

Hyperparathyroidism with bone pain and vascular calcifications contribute to poor quality of life in

HD patients

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PP

Renal osteodystrophy and its consequences like bone pain, and vascular calcifications represent a major clinical problem in dialysis patients. Quality of life (QoL) has already become an important measure for the evaluation of outcome of these patients. No many data exist on the impact of these complications on QoL domains of such patients. We evaluated and compared QoL of HD patients using a generic (SF-36) and a disease specific instrument (Renal Quality of Life Profile, RQLP). We studied 76 patients (38males) 62 years old (24-88) who were on HD treatment for 87 months (23-276) in 5 renal units of national health care system. They were in stable clinical condition. Serum calcium, phosphate, CaXP product and iPTH were 9.2+0.7 mg/dl, 5.1+1.3 mg/dl, 46+14, and 274+273 pg/ml respectively. Twenty-eight of them suffered from bone pain and 26 presented vascular calcifications. Twenty of them had performed parathyroidectomy in the past. Results: Overall, patients exhibited a mediocre QoL. Worst scores (SF-36) were in physical activity, energy, vitality and general health. The presence of bone pain, using SF-36 questionnaire, was limiting physical activity (P=0.01) and energy-vitality (P=0.004) domains, whilst with RQLP, bone pain contributed to dietary disorders (P=0.03). There was a straight correlation of PTH and CaXP product, and higher PTH, using SF-36, was associated with somatic pain (P=0.003), restriction of social function (P=0.02) and energy-vitality (P=0.02), while using RQLP higher iPTH were associated with worst scores in psychosocial activity (P=0.01) and dietary disorders (P=0.01). Presence of vascular calcifications was associated with limitations in physical (P=0.02) and leisure activity (P=0.002) of the patients (RQLP). History of parathyroidectomy was an independent factor for worse scores in energy-vitality (SF-36, P=0.03)) and leisure activities (RQLP, P=0.02)). Conclusions: quality of life of these patients was not satisfactory. Hyperparathyroidism, bone pain, and presence of vascular calcifications contributed significantly to their poor quality of life. Preventive measures for the presence of renal osteodystrophy must be applied in order to ameliorate QoL and rehabilitation of dialysis patients.

Aortic distensibility in chronic renal failure: the effect of diabetes

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PP

The aortic distensibility (AD) is an independent predictor of survival in end-stage renal disease (ESRD) and general population. In this study we aim to investigate the association of AD and the presence of diabetes in ESRD patients.

We examined fifty five patients with creatinine clearance <20 ml/min. Twenty four were diabetics (17 men, 7 women, mean age 60.3 ± 15.1 years) and thirty one wer non-diabetic patients (18 men, 13 women, mean age 57.6 ± 16.4 years). In chronic hemodialysis were 40% and 48% of the groups, respectively. Twenty healthy controls, matched for age and sex, were also evaluated. AD and Left Ventricular Mass intex (LVMi) were assessed by high-resolution ultrasonography.

AD was significantly lower in diabetic than in non-diabetic patients (1.53 ± 0.12 vs. 1.66 ± 0.16 cm^2 dyn^{-1} 10^{-6}, respectively, P= 0.002). The patients had remarkably lower AD compering to controls (1.60 ± 0.16 vs 2.31 ± 0.34 cm^2 dyn^{-1} 10^{-6}, P< 0.001). LVMi was almost double in patients (201.7 ± 46.9 vs 118.8 ± 21 gr/m^2 in controls, P< 0.001). In contrary, LVMi was almost the same in diabetic and non-diabetic patients (201.2 ± 46.4 vs 202 ± 48.2 gr/m^2 respectively, P=0.96).

Conclusions: Although diabetic ESRD patients have similar LVMi, they have lower aortic distensibility, comparing to the non-diabetics. This can partially explain the increased cardiovascular mortality in this group of ESRD patients. Further studies should be done to evaluate this relation and its possible treatment.

High-volume plasma exchange: an effective and safe therapeutic procedure for numerous disease states

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PP

We undertook a retrospective review of plasma exchange treatment to ascertain its safety and efficacy and to demonstrate our single center activity. Since 1985 membrane plasma exchange (PE) has been in regular use at our Department. The number of therapeutic procedures is increasing steadily year by year. In the recent five years,

from 1999 to 2003, 470 plasma exchange (94 PE/per year) have been performed in the treatment of 88 pts with various diagnosis (Crescentik glomerulonephritis, Systemic lupus erythematosus, Recurrent glomerulonephritis in kidney allograft, Sy. Wegener, Myasthenia gravis, Guillain-Barre sy, Macroglobulinemia, Sy. Moskowich). PE was performed 2-4 times weekly using Gambro PF 2000N filters. Average 5.3 PE sessions per patient were performed with average amount of 2150 ml plasmafiltrate per treatment. We have not registered any serious side effects during the PE procedure. The therapeutic apheresis consists of a continuously improving therapeutic method for different immunological diseases with high mortality and morbidity. We conclude that therapy with PE is a feasible, well tolerated and save.

Peritoneal dialysis suppress the progression of chronic renal failure

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PP

End-stage renal disease requiring dialysis or transplantation is a major health problem all over the world. From a clinical and economic point of view it is very important to retard the progressive decline of GFR. There are many clinical data suggesting that peritoneal dialysis (PD) may suppress the progression of CRF. The aim of our study was to compare the rate of progression of CRF prior and after starting PD. Seventeen pts were followed up 6 months before going on PD through 6 months after starting the dialysis. All pts were treated with ACE inhibitors. Blood pressure was measured regulary. GFR was calculated as mean of urea and creatinine clearence. Rate of progression of renal failure (measured as rate of decline of GFR) was calculated for each pt. The obtained data were statistically evaluated with Student's t-test. The rate of decline of GFR was significantly lower after starting PD (0,43 + 0,67 ml/min/month) as compared with decline of GFR prior to starting PD (1,12 + 1,18 ml/min/month, p = 0,0035). There was no statistical defference between the MAP (pre PD 107,6 + 10,1 mmHg vs PD period 103,6 + 9,8 mmHg) as a possible factor of decline of GFR. Early start of PD may benefit the preservation of RRF. Further larger study is necessary to address the possibility of these findings. Our results support the concept that the early choice of PD may be more cost-effective than the late start of dialysis.

A study of the effectiveness of music listening in reducing stress and perceived pain in patients undergoing hemodialysis

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PP

Research findings have indicated that stress and pain are two of the main factors that affect quality of life in patients suffering from chronic illness. The aim of this study was to examine the effectiveness of music listening in reducing stress and perceived pain in patients undergoing hemodialysis treatment. This study adopted a quantitative approach and involved a between-subjects design. Sixty end stage renal failure patients (n=60) who were undergoing hemodialysis treatment participated in this study on a voluntary basis. Participants were divided into control (n=30) and experimental group (n=30). Patients in both groups were asked to complete before the intervention the State-Trait Anxiety Questionnaire, one form from the McGill Pain Questionnaire and a Pain Visual Analogue Scale. After completing the questionnaires participants in the experimental group listened to a cd of their preference. Participants in the control group did not receive any music listening. After the intervention participants in both groups completed the State-Anxiety Questionnaire and the Pain Visual Analogue Scale. In addition, participants in the experimental group were also asked to complete an evaluation questionnaire on the music intervention they received. Results were analysed using the SPSS. Results indicated that mean State Anxiety scores differed significantly across group after the intervention F (1,58) = 35.877, p= .000, specifying that mean State Anxiety scores for participants in the experimental group were significantly lower than mean State Anxiety scores for participants in the control group. In addition, there was a positive significant correlation between trait and state anxiety scores (r=.708, p<.01) suggesting that perception of stressful situations is directly related to stress as a personality characteristic. Furthermore, findings revealed that trait anxiety scores differed significantly between male and female participants, with women scoring higher than men in trait anxiety (t= -2.286, df=58, p=.026, 2-tailed). Results did not indicate a significant difference between group means of perceived pain. The present findings suggest that music has the power to reduce stress and act as a source of relaxation and distraction in medical settings.

Primary fistulae for haemodyalisis, follow-up

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PP

In 1966 Brescia and Cimino created first artery-vein fistula between radial artery and the most suitable forearm vein, most often cefalical vein. These fistulas should remain trouhgflow after one year more then 65%.The aim is to show functionality of primary fistulas for haemodyalisis in follow-up (12-18 months). Sample is 40 patients in end-stage and chronic renal failure who were operated in the period from 01.07.2002 to 31.12.2003.

All patients are with constructed primary A-V fistulae, by direct latero –terminal anastomosis between a.radialis - v.cephalicae.Follow up 38 patients (12 -18 months), (2 exitus letalis).

Results: Patients are approximately 63 years old, distribution by sex : 42% female and 58% male. Complications: 6 patients had thrombosis (in two cases was done thrombectomia successfully, while in for cases new vascular approach was done), two late occlusions (new vascular access) and one wound infection (solved by everyday care and antibiotics), while 30 patients have functionally A-V fistulae.

Conclusions: 38 patients are followed, 30 (79%) is still on haemodyalisis (by primary A -V fistulae) in International dialysis center in Bijeljina, three times weekly by four hour, (bicarbonates dialysis with high flux membranes).

Survival of patients in one dialysis unit

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PP

Our aim was to study survival parameters of patients on dialysis treatment. Data of 45 (M:27, F:18) patients were used for this purpose. They have started renal replacement therapy at the age of 52.2+/-16.2 (range 18-86) years old and they completed a follow-up of 64.1+/-36.5 (range 5-156) months. Kaplan-Meier analysis was done for survival as a whole as well as regarding the cause of kidney disease, age of dialysis commencement, presence of diabetes and/or hypertension and serum antibodies against hepatitis C virus. Cumulative median (50th percentile) survival was 67 months, while the lower quartile (25th percentile) and the upper quartile (75th percentile) were 36 and 92 months, respectively. The cause of kidney disease influenced ($p<0.001$) patient survival (median, mean+/-SD, months): interstitial nephritis 27.0, 39.4+/-46.5, obstructive nephropathy 21.0, 39.2+/-49.3, polycystic kidney disease 60.0, 65.6+/-9.8, diabetic nephropathy 27.5, 35.1+/-36.0, glomerulonephritis 60.0, 58.7+/-28.7. Survival (median, mean+/-SD, months) was also different ($p<0.001$) after stratification for age of dialysis start: 20-29 years 73.0, 73.0+/-74.9, 30-39 years 34.0, 37.1+/-26.9, 40-49 years 73.0, 83.1+/-41.4, 50-59 years 60.0, 63.0+/-29.9, 60-69 years 36.0, 40.4+/-21.4, 70-79 years 11.0, 25.8+/-33.5, >=80 years 27.0, 41.0+/-26.9. Presence of diabetes and/or hypertension marginally ($p=0.06$) influenced survival (median, mean+/-SD, months): diabetes 32.0, 26.2+/-12.1, hypertension 46.0, 54.7+/-40.3, none of them 49.0, 55.1+/-35.6, both of them 16.0, 16.0+/-7.0. Survival (median, mean+/-SD, months) with regard anti-HCV antibodies test was not different ($p=0.77$): positive 46.0, 55.4+/-44.6, negative 36.0, 48.2+/-34.5. In conclusion, type of kidney disease, age of entering replacement therapy and presence of diabetes mainly affect survival of patients undergoing haemodialysis.

Role of residual renal function in improving the blood count in patients on continuous ambulatory peritoneal dialysis

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PP

Most of the patients with chronic renal failure disease are affected by normochromic, normocitic anemia of multifactorial etiology. Anemia causes a serious of symptoms in chronic renal failure and increases the rates of morbidity and mortality in patients affected by advanced renal failure. In spite of early finding of anemia in chronic renal failure, novel trials found positive influence of residual renal function (RRF) on outcome in chronic dialysis patients. Higher RRF decreases co-morbidity, the rate and duration of hospitalizations and the risk of method failure. Theaim of the study was following RRF and blood count parameters in 32 patients, 17 male and 15 female, middle age 68 years (range 31 to 78 years) affected by end-stage renal disease (ESRD) of different leading cause during the first 6 months of continuous ambulatory peritoneal dialysis (CAPD) treatment. All of the patients performed 4 2 l. exchanges daily and they were advised for a diet with 1 g/kg protein and 30 kcal/kg daily.The control group was a group of patients receiving recombinant human erythropoietin (EPO) during the first 6 months of CAPD treatment. Data were statistically analyzed by the Student's t

test and the Pearson's correlation test. We found that blood count significantly improved in our patients during the first 6 months of CAPD treatment even if hemoglobin (Hb) and hematocrit (HTC) didn't reach the normal values. Iron serum level and RRF slightly decreased. Demographic and clinical factors - gender, age, diabetes mellitus, peritonitis, blood transfusions, iron and EPO substitution, didn't influence blood count nor RRF during the first 6 months of CAPD treatment. After a 6 months follow-up, patients with higher RRF had significantly higher Hb, HTC and erythocyte number and a lot of positive correlations were observed between RRF and anemia markers.

Problems in diagnostic and therapy of peritonitis in patients on CAPD- our experience

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PP

The most frequent complication of peritoneal dialysis is acute peritonitis. It is usually caused by one microorganism; the infection has local characteristic, and the mortality is registrated in 1,3-1,9% of patients. Aim of the study was to evaluate the rate of peritonitis, causative organisms and antibiotic susceptibility in our CAPD patients. During the last Four Years, in 98 CAPD patients aged 50,46±18,18 in average, 201 episodes of peritonitis were diagnosed (one episode per 23,9 months of treatment). Bact/Alert Organon techique was used for automatic continuous monitoring of bacterial and fungal growth. Increased growth of the Gram-positive bacteria was detected in 149 (74,12%); Gram-negative in 24 (11,94%) and fungi in 8 (3,79%) of dialysis effluent cultures. Culture was sterile in 18 patients (8,95%) and TBC peritonitis was histologically confirmed in two patients. Isolated strains of CNS, Staphyloccocus aureus and Enteroccocus showed 100% sensitivity to Vancomycin and Enterobacteriacae to Imipenem. Methicillin-resistent CNS strains were found in 65.20% and S. Aureus in 46.20% of samples. In 88.1% of all episodes the peritonitis was cured with antibiotics treatment, and in 10.9% the catheter had to be removed. In 0.99% of the cases, the patients died during the peritonitis episode, mostly for reasons not related to the infection. Conclusion: The diagnosis of CAPD peritonitis has to establish on well known definited criterions. The therapy must be started immediately by own expirence (Cefazolin and Ceftazidim, or Vankomicin/Klindamicin and Ceftazidim in difficulty cases), and after results of culture to continue according to antibiogram of isolated microorganism. If there is no clinical improvement, the tharapy must be modified or the catheter has to be removed. Implementation of known preventive measures, the incidence of acute peritonitis have to 1 episode per 36-42 months.

Outcome of femoral catheters used as a temporary vascular access - diabetic vs non - diabetic patients

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PP

The proportion if diabetic patients (pts) among the pts entering dialysis is increasing continuously. Femoral hemodialysis catheters (FC) were indicated as a short-term bridging solution i.e. to permit creation or maturation of AVF. In a prospective study we looked at the outcome of a group of 240 pts receiving chronic hemodialysis treatment (HD) via 268 FC, in order to identify pts outcomes and to analyze the effect of a pts primary disease (diabetic and non-diabetic pts), and catheter factors on the incidence of infectious complications. A total of 52 pts with 54 FC were analyzed in gr.A (diabetic) and 188 pts with 214 FC-gr.B (non-diabetic). Using chi-square test we found no significant difference between groups in age (A- 55,7+/-9,4 years; B- 50,46+/-17,2 y, p=0,93), number of catheters (A-54, B-214 p=0,67) and sex (p=0,74). Duration time of catheters was: A-7-85 days (median 26 days), with cumulative total of 1677 days; B -7-77 days (median 19d) with cumulative total of 7162 days. The reasons for catheter removal were: availability of a permanent access -A-33 (61,1%), and B- 194 (90,7%); malfunction: A-17 (31,5%), B-8 (3,7%); infection: A-4 (7,4%), B-12 (5,6%), and here we found significant difference with chi-square test (p=0,00001). Kaplan-Meier curve of survival of FC between two groups did not show statistical difference (log-rank test p=0,17025), and catheter survival in diabetic pts adjusted for age (log-rank test p=0,22125) and sex (log-rank test p=0,61755) did not show statistical difference, too. Antibiotics were used, based on the antibiogram when we had a suspicion of catheter-related infection (CRI) in both groups, A-14 CRI, B-36 CRI- no significant difference (chi-square test p=0,28) . Coagulasa negative staphylococci were most frequently isolated cause for CRI. This study has shown that temporary FC can be used for a relatively long period without severe clinical complications. We found that in the group of diabetic pts the percentage of malfunction was higher but these findings were not statistically significant. The high incidence of CRI at diabetic pts was not confirmed with our study.

PP = Poster Presentation; OP = Oral Presentation

Administration of iron therapy in chronic peritoneal dialysis (CPD) patients

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PP

According to European Best Practice Giuidelines (EBPG) for anemia menagement, ferritin levels should be ≥ 100 µg/l and TSAT shoul be ≥ 20% in CPD patients (pts). Maintaining adequate iron stores in CPD pts on EPO therapy can be challenging and the proper replacement therapy is still controversial. Aim: To determine if oral iron replacement is able to maintain adequate iron stores and Hb levels in CPD pts receiving EPO therapy. Methods: We reviewed the charts of all new pts that started CPD at our unit from 1996 to 2004. Pts who remained on CPD for 1 year, had adequate iron stores at the start of dialysis and received EPO therapy, were included in the study. The pts iron status and Hb levels were followed for 1 year after starting CPD. EPO doses were adjusted to maintain Hb levels within EBPG. We retrospectively evaluated whether adequate iron stores were maintained and what modality of iron replacement was used (intravenous-i.v. vs oral). Results: Type of iron replacement therapy over 1 year period and number of pts that met EBPG after one year: Type of iron Pts at onset (n) Pts with adequate Fe stores after one year None 7 4 (57%) Oral only 10 8 (80%) IV+ oral 2* 2 (100%) * 1 pt had relapsing peritonitis, and 1 pt had nospecific cause of Fe loss. Conclusion: The majority of pts on CPD can be treated with oral iron to maintain adequate iron stores and Hb levels for at least 1 year. The need for IV iron is infrequent and may indicate iron loss rather that utilization.

White coat effect in haemodialysis patients using ambulatory blood pressure monitoring

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PP

Hypertension in renal patients contributes significantly to morbidity and mortality. The "white coat effect" is defined as transient rise in blood pressure that occurs in the clinical setting. Treatment decision is usually based on measurement in the clinical setting, which usually results in overestimated blood pressure. The aim of the study was to assess the white coat effect in haemodialysis patients using data of ambulatory blood pressure monitoring (ABPM). The data of the first two hours of ABPM were used as blood pressure in clinical settings and they were compared with 24-hours ABPM data. All patients were defined as hypertensive patients (whose clinical blood pressure was in a hypertensive range and all patients were on antihypertensive drug treatment). In 104 patients (55 male and 49 female) with average age of 49,8 years the oscilometric method (Space Labs 90207 ABP monitor) was performed between two haemodialysis sessions. The underlying renal disease was diabetic nephropathy in 18 patients, glomerulopathy in 11 patients and other renal diseases in 75 patients. 24-hour ABPM The first2-hour ABPM Diff. in % p Systolic BP(mmHg) 158,04 + 21,2 159,4 + 24,9 + 0,8 n.s. Diastolic BP(mmHg) 91,40 + 15,6 93,6 + 18,7 + 2,42 p < 0.001 Heart rate(beats/min) 82,40 + 11,8 86,4 + 13,2 + 4,8 p < 0.001 White coat effect is frequent in haemodialysis patients and using ABPM could not be avoided. However, in some patients blood pressure in the first two hours of ABPM was lower than the average value of 24-hour ABPM. That may be influenced by drug administration, impaired diurnal variation of blood pressure or elevated blood pressure during nighttime.

Clinical complications in patients during hemodialysis

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PP

The aim of our study was to present the clinical complications of patients on chronic hemodialysis program during hemodialysis. Patients' histories and daily register. In the Centre of hemodialysis there were 35 patients on dialysis, 23 male (65, 71%) and 12 female (34, 29%) at the age from 38 to 70. The most frequent complication was hypotension in 10 (28, 57%) patients, and in 2 of them periodical hypotension with collapse. Hypotension appeared in 6 (17,14%), cramps occurred in 4 (11,43%), headache in 3 (8,57%), itching in 2 (5,71%), fever in 1 (2,86%), vomiting with hypotension in 3 (8,53%) and hypoglycemia in 3(8,57%). Pain from diverse origin, especially pain in the joints, muscles, bones, and lumber pain occured in 5 (15, 63%) of the patients. It was usually of rheumatic character and hyperparathyroidism. Occasionally some of the patients got palpitations and tachycardia, whereas 3 were stable and had no serious difficulties. The complications during HD were from hyperhydration of the patients in the interdialysis period. Three patients had no hyperhydration. Over 2 kg of allowed weight between two dialyses had: 7 patients with 1 kg, 21 patients to 2 kg, 2 patients to 3 kg and 2 had 4,5-5 kg. The complications are very frequent phenomenon at HD, and to reduce them, the patients need to follow the hygienic diet regime and continuous control of the medical personnel (doctor, nurse, and technician).

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Bacterial infections associated with central venous catheters for haemodialysis

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PP

A retrospective study on infections complications of the double lumen catheterization of central veins for haemodialysis and PD was done in 2004. In period from January to December 2004, 60 catheters were placed. 55 patients had double lumen, one of plasmopheresis and 54 to haemodialysis. The mean duration of catheters remaining in situ was 36.67 days (7 - 145 days). There were placed 7 double lumen catheters with coffe and tunelisation, and the other 49 patients had catheters of a short duration. Smears were taking with routine from the top of catheters after extraction, and from skin around the place where catheters were inserted. Haemocultures were taken, and smears from periphery (smears from pharynx, nose and urinoculture). Reasons for placing catheters were acute renal failure in 19.82%, CRF 35.71%, and complications of permanent vascular access in 44.64%.

In 2|55 patients, Staphylococcus aureus and Enterococcus species were isolated, from the top of dialysis catheter, after extraction, and without positive blood bacterial cultures. In a few patients microorganisms were isolated rom periphery on skin changes 2|55, urine 2|55, and pharynx 1|55. Prophylaxis with antibiotics was realized at 18|55 patients, antibiotics from group of cephalosporin and chinolons in from 7 to 14 days. Mortality during the period of observation was 7|56 patients.

On based parameters, the conclusion is that duration of placed catheter isn't in correlation with frequency of infection. Respect of surgical principles, aspects and disinfection has contribution to decreased frequency of catheter for dialysis infections.

Influence of low and high calcium containing dialysate solution on QT interval duration in hemodialysis patients

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PP

Cardiac disease is the leading cause of death among prevalent maintenance dialysis patients. QT interval prolongation is a risk factor for cardiac arrhythmias and sudden cardiac death in dialyis patients.

The aim of the present study was to compare the effects of high and low calcium containing dialysate on QT interval duration in our hemodialysis patients.

In an open label, randomized, parallel group study, we treated for six months twelve patients with high dialysate (Hd) calcium (1,75 mmol/l) and eleven patients with low (Ld) calcium (1,25 mmol/l) dialysate concentration. Inter-hemodialysis ECG (electrocardiogram) was recorded during the trial period and QT interval duration was calculated. Pre and post-hemodialysis total and ionized serum calcium levels were measured twice monthly.

There were no significant differences in pre-hemodialysis total and ionized serum calcium levels between the groups, but there were significantly higher levels in post-hemodialysis measurements of these parameters in patients treated with high calcium containing dialysate. Hence, patients in Hd group tended to have longer QT intervals when compared with patients treated with low calcium containing dialysate, although statistical significance was not reached.

In conclusion, the use of high calcium containing dialysate may predispose hemodialysis patients to cardiac arrhythmias.

Hyperhomocysteinemia-hyperprolactinemia: is there a possible relationship in hemodialysis patients?

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PP

Hyperprolactinemia is frequently seen in ESRD patients as a common cause of sexual dysfunction. Recent studies have demonstrated that hyperprolactinemia might also be a risk factor for atherosclerosis via endothelial dysfunction and insulin resistance which are also metabolic consequences of hyperhomocysteinemia. The objective of the present study was to investigate the relationship between homocysteine and prolactin, vitamin B12, folic acid levels in male hemodialysis (HD) patients. Methods: Twenty-one male ESRD patients undergoing HD more than 6 months and 10 healthy male controls were enrolled in this study. All patients have received folic acid 5 mg and vitamin B12 1 mg after dialysis sessions since initiation of hemodialysis. Serum prolactin (PRL), total homocysteine (tHcy), vitamin B12 and folic acid levels were studied in each group. The

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correlation between tHcy and PRL, folic acid and vitamin B12 levels were investigated. Results: Hemodialysis patients had higher tHcy, PRL, vitamin B12 and folic acid levels compared to healthy controls. There was no significant correlation between tHcy and vitamin B12 (r= -0.209, p>0.05) and folic acid (r=0.038, p>0.05) levels in HD patients. However, a significant correlation was found between serum tHcy and PRL levels (r=0.52, p=0.015). Conclusion: Hyperprolactinemia might be an additional risk factor for hyperhomocysteinemia in HD patients. Treatment of hyperprolactinemia might decrease cardiovascular events in these patients.

Mortality in the dialysis centre-strumica in the period between 1995 and 2005

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PP

This analytical study was performed in order to assess the mortality at our Dialysis Unit in a period of one decade and to compare our findings with those from another dialysis centers in the country.

Over the last ten years 100 patients were treated in our centre, 56 males and 44 females. In the last five years 6 patients have been transplanted successfully, while 61 patients died (33 male and 28 female). The mortality in the period between 1995 and 2004y. is presented on the following table:

year	death per patients	percentage	year	death per patients	percen-tage
1995	4	9,0%	2000	6	9,2%
1996	3	6,4%	2001	6	9,3%
1997	5	9,8%	2002	9	14,5%
1998	9	15,0%	2003	7	13,2%
1999	3	5,2%	2004	9	18,7%

According to the duration of haemodialysis treatment: 13 were treated less than one year; 17 were treated between 1-5 years; 21 were treated between 5-10 years; 8 were treated between 10-15 years and two were treated between 15-20 years.

When stratified according to the age of the patients who died: one patient between 20-30; one patient between 30-40; 7 patients between 40-50; 16 patients between 50-60; 26 patients between 60-70; 10 patients between 70-80 years of age.

We can conclude that the percentage of male patients maintained on dialysis and the percentage of male patients' mortality was the same - 54%. Concerning the female patients, the percentage was 46%. The highest mortality was observed in the group of patients between 60-70 years of age. Most of the patients belonged to the group with maintaining dialysis treatment between 5-10 years.

Late lesions in arterio-venous fistulas: histopathological findings in tunica intima of the venous wall

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PP

The aim of this study was to evaluate the histomorphological spectrum of lesions in tunica intima of the venous wall of the arterio-venous fistulas (AV-F) in the patients on haemodialysis, using light microscopy.

Twelve segments of the venous wall of AV-F, 11 years after insertion, were taken for histopathological analyses. We used paraffin sections from the vessel wall, stained with HE, Azan-Mallory, Florantain, Orcein and Cossa-Goldner.

Damage of the whole venous walls was seen. Mean thickness of the tunica intima was 49,10µm which is 60,96% of the whole thickness of the venous wall and is statistically significant compared to the control group. In three segments there was a thrombus, organized and recanalized and in two a presence of already formed but still not organized completely, "fresh" thrombus. In five segments intensive vacuolar degeneration of smooth muscle cells was found. Formation of the membrane elastica interna was seen in 5 segments which were well formed in 4 segments and discontinuated in one. Neovascularization was present in the base of tunica intima, near the media, in 6 segments with mild to moderate grade. Atheromatous changes and areas of calcification were present in analyzed segments.

The analyses showed different origin and various degrees of alterations and lesion on the three tunica, as structure elements of the venous wall, but crucial and most important are those of the tunica intima. Thickening, asymmetric intimal fibrous proliferation together with neovascularization has had a major role in human haemodialysis fistulas failure.

Presence of hepatitis C virus in patients on chronic haemodialysis detected by RT/PCR and its

quantitative determination with RT/PCR monitor test

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PP

All our investigated patients were on chronic haemodialysis program between October and December 2004. Out of the total 32 investigated patients, we found the following presence of hepatitis C virus: 19 were positive, 14 female and 5 male. That represents the percentage of 59,37% for all and 43,75% for females and 15,62% for males. It is important to point out that HCV is more present in female patients in comparison with males. The sera of our patients were prepared in the service for medical biochemistry and sent to the previously mentioned laboratory for detection and determination of HCV with the PCR method at the Macedonian Academy of Science and Art (MASA). Detection of HCV with RT/PCR proves the presence of Hepatitis C Virus, genotype 1.

In comparison with Hepatitis B Virus which was present in 10 of our patients with HBsAg positivity, HCV infection was more frequent and it needed more serious approach in the treatment. At the same time, B and C Hepatitis viruses were present in 5 patients.

The aim of this work was to confirm the presence of Hepatitis C Virus and to start regular treatment of the patients on regular haemodialysis program, with Peginterferon alfa-2a (40KD), once a week up to 6 months.

Such treatment was also performed in a patient who had had transplanted kidney for 5 years successfully, after the treatment with interferon. No recurrent infection was noted in this patient with HCV.

Histological findings in tunica media of the venous wall in arterio-venous fistulas in patients on haemodialysis

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PP

The aim of this study was to evaluate qualitative alterations and lesions found in tunica media of the venous wall in arterio-venous fistulas (AV-F) in patients on haemodialysis, taken 11 years after their insertion.

Twelve segments of venous wall of AV-F were taken from patient undergoing 11 years on maintenance haemodialysis. We used paraffin sections from venous walls stained with HE, Azan-Mallory, Florantin, Orcein and Cossa-Goldner. They were analyzed by light microscopy.

Histological structure of tunica media was changed, supporting the changes of tunica intima which were obviously primary and initial. Moderate to severe atrophy of smooth muscle bundles, which were with fragmentation and other degenerative lesions, was found in 5 segments. Signs of neovascularization and extravasation were seen in five segments. Presence of more elastic fibers and hyalinization was noted in 3 of all analyzed segments. Calcifications were seen in 2 segments. Qualitative domination of connective tissue elements comparing to muscles was found in all segments.

In conclusion, we can say that although lesions and alterations in structure of tunica intima of the venous wall of AV-F is crucial, it needs "support" from tunica media. Changes in the structure of the tunica media are very important and valuable because they show the direction for the lesions of tunica intima towards the "progression" but also contribute in loss of elasticity of the venous wall, which is one of the major mechanisms in athermatous lesion of venous walls and failure of AV-F.

Conservative oral therapy with calcitriol in dialysis patient with secondary hyperparathyroidism (sHPT)

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PP

The aim of this case presentation was to show the possibilities of a conservative therapy with Calcitriol at doses that might inhibit the high bone turnover in renal patient with SHPT.

A 27 years old male patient was diagnosed with chronic renal failure and started renal replacement therapy 3 years ago. At the commencement of the dialysis program the routine laboratory showed extremely high serum levels of total alkaline phosphates (TAP) of more than 3000 U/L and a relatively low serum calcium (Ca) 1,82 mmol/l and phosphorous (P) values of 1,68 mmol/l. Intact parathyroidhormon (iPTH) was >2500 pg/mL and osteocalcin >100,00 ng/mL. Since the patient complained for marked back and palmar pain, radiographic investigations revealed a few vertebral fractures and signs for resorption of small phalangeal bones. At the early

beginning an oral therapy with Calcitriol 0,5µg/day was started. After a year of such a treatment TAP levels decreased to 2000 U/L and Ca increased to 1,9 mmol/l. Phosphate serum levels were well controlled with 6g/day calcium carbonate, being 1,7-1,8 mmol/l. Since calcium x phosphorus product was in a proposed range below 4.4, an intermittent bolus dose of Vit. D was administered with 2,0µg, 4 times/week. Patient was on standard bicarbonate dialysis with calcium dialysate concentration of 1.75 mmol/l, since there was no need for a low calcium dialysate solution. With this treatment within a last year a substantial decrease in serum TAP was obtained to 688 U/L and the symptoms of bone pain became less prominent.
In the conclusion a bolus intermittent calcitriol therapy could be observed as a biochemical parathyroidectomy, sufficient to suppress extremely high bone turnover and further bone destruction.

Hepatitis B and C infections in the department for hemodialysis-Kochani

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PP

The aim of the papir was to show the frequency of Hepatitis B & C infections in patients of the Dialysis Department. The infection was probably acquired through the devices for dialysis and by frequent blood transfusion these patients need. Laboratory analyses (hepatogram, AST, ALF, AF, HBS Ag, antiHCV using Ellissa method, immunochromatographic and Abbott tests) gave the following results: in 2001 from 28 patients HBsAg+ 3 (male 1, female 2), anti HCV + 26 (male 14, female 12). In 2002 from 30 patients HBsAg+ 3 (male 1, female 2), anti HCV+ 26 (male 14, female 12), negative 4. In 2003 from 34 patients HBsAg+ 6 (male 3, female 3), anti HCV + 32 (male 19, female 13), negative 2. In 2004 from 34 patients with HBsAg+ 7 (3 male, 4 female), anti HCV+ 34 (20 male, 14) in the period between 2001 and 2004 (4 years). The risk for someone on hemodialysis to be infected with the virus of Hepatitis B & C is 5-10 times bigger than in the rest of the population. Besides other activities, for preventing the infection with Hepatitis B & C at our Department, the following procedures are being undertaken: effective desinfection, moving the patients with positive results on separate devices. We have also introduced immunization of the patients and the staff with the Engerix - B Glaxo Smith Kline vaccine.

Lipid profile of patients with terminal chronic renal insufficiency

treated with repeated hemodialysis

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PP

Forty patients (24 male and 16 female) treated with repeated blood dialysis at the Regional center for chronic hemodialyses in Tetovo were included in this study. The patients have been on a chronic blood dialysis therapy for 12 months at least.
Lipid profile (total lipids - g/l, triglycerides, total cholesterol, HDL-ch and LDL-ch – mmol/l) of the last 3 months was determined for each patient. The results are presented as an average of three successive measurements. Blood was taken after 12 hours fast.
25% of the patients showed increase of the total cholesterol; 27.5% have increased values of triglycerides, while total lipids were elevated in 17.5% of the patients. The electrophoretic analyses showed that pre-ß-lipoproteins (VLDL) were dominant in 67.5% of the patients, while ß-lipoproteins dominated only in 17.5%. The same group of patients was examined from an aspect of the basic disease, sex, age, duration of dialysis treatment and body mass index (BMIx). Patients with increased BMIx (over 26.0-34.9) had noticeably elevated lipids with dominant dislipidemia. Duration of blood dialysis and age did not alter significantly the normal lipid values.
Hyperlipoproteinemies were divided according to Frederickson. Hyperlipoproteinemy Type II_b was confirmed in 5% of the patients, while in 17.5% Type IV was found.

Effect of simvastatin on triglycerides, low-density and high –density cholesterol kinetics in chronically haemodialyzed patients

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PP

Plasma triglycerides, total cholesterol, low-density and high density cholesterol concentration were determined in patients with chronic renal failure treated by chronically repeated haemodialysis (N=60) before and after treatment of two (2) months with 20 mg simvastatin (once daily, after dinner). In addition, the plasma activity of enzymes (alkaline phosphatase /AP/, LDH, AST, ALT, CPK, CK-

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mb), possibly involved as a markers of hepatic or muscle toxicity, was detected as well. Results demonstrated that the plasma triglycerides (TG) and low-density cholesterol (LDL) concentrations were significantly higher in patients with chronic renal failure (CRF) submitted to chronic haemodialysis than in control subjects matched to sex and age ($p< 0.05$). The high-density (HDL) cholesterol concentration before treatment with simvastatin in investigated patients was near the normal value (1.24±0.50 mmol/l for men and 1.32±0.49 for women; referent values in controls: 1.60±0.71). The therapy with simvastatin was really effective concerning the TG, and LDL cholesterol and their plasma concentrations were significantly diminished ($p< 0.05$-0.001). The HDL cholesterol concentration after simvastatin treatment was higher than the pre-treatment values (1.41±0.58 and 1.36±0.46 for men and women respectively) but without statistical significance ($p < 0.25$-0.7l). The activity of tested hepatic and muscle enzymes (AP, AST, ALT, CPK, CK-mb) before and after treatment with simvastatin in the same group of dialyzed patients was not significantly different, except for the LDH, where the enzyme activity was statistically lower after therapy (154.7 ± 27.8 vs 133.7±39.5 U/l, $p< 0.02$ for men, and 159.4±38.6 vs 139.6 ± 39.5 U/l, $p < 0.05$ for women). Having in mind the newly accepted theories for accelerated arteriosclerosis in the context of CRF, the medical control of lipid profile rises considerable importance.

Improvement in creation and patency of primary arteriovenous fistula due to preoperative color doppler ultrasound evaluation

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PP

The native arteriovenous fistula (AVF) at the wrist has been considered as the best choice for permanent vascular access in hemodialysis patients (pts). The DOQI guidelines stated that creation of a primary AVF is possible in only 50% of pts. Preoperative evaluation with color Doppler ultrasound (CDU) and mapping of the arterial and venous vascular tree could allow creation of an AVF in a higher proportion of pts.

The aim of our study was to compare outcome of primary AVFs by assessing reintervention frequency rates in two consecutive years without (year 2003, group A) and after preoperative evaluation with CDU (year 2004, group B).

Preferred vascular access in both years was AVF (2003: 21/25, 84% vs. 2/25 for PTFE or permcath, $\chi^2= 17.2$, $p < 0.0001$; 2004: 62/70, 88% vs. 6/70 for PTFE $\chi^2= 86.5$, $p < 0.0001$ and 2/70 for permcath $\chi^2= 93$, $p < 0.0001$). Although more procedures were done during 2004, similar frequencies were found comparing either AVF (A: 21/25; B: 62/70,$\chi^2= 0.06$, $p = 0.81$), vascular prothesis (A:2/25, B: 6/70, $\chi^2= 0.11$, $p = 0.74$) or permcath placement (A: 2/25; B: 2/70; $\chi^2= 0.27$, $p = 0.60$). There was a 50% decrease in reintervention frequency rate between groups (A: 6/21, 28.5%; B: 9/62, 14.5%), but not significant ($\chi^2= 2.05$, $p = 0.148$).

Preoperative CDU evaluation reduced reintervention rate for 50%, suggesting improvement in primary patency of native AVF and maintenance of high AVF creation rate.

Gain effectiveness in Anemia treatment with NeoRecormon®: an interim analysis

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PP

Recent studies have shown that there is room for improvement in renal anemia management globally. GAIN evaluated epoetin beta (NeoRecormon® – F. Hoffmann La-Roche Ltd) effectiveness and tolerability in >4500 stable hemodialysis (HD) patients from 217 centers across 13 European countries. Patients previously treated with epoetin for ≥12 weeks (retrospective phase [RP]) were switched to epoetin beta (intravenous [IV] or subcutaneous [SC]) for 6 months (observational phase [OP]). Interim data are presented for 1005 patients following removal of 63 patients due to transfusion (6), bleeding (10) or infection (47).

The cohort was 56.4% male, mean age 60.9 years with normal blood pressure. The primary disease etiology was diabetic nephropathy (22.9%) and glomerulonephritis (27.0%). During the RP, patients received epoetin alfa (69.9%), epoetin beta (20.9%) or darbepoetin alfa (DA, 9.2%). The IV:SC ratio was ~5:1 during RP and 1:1 during OP (26% switch to SC). At baseline (end RP, pre-OP), European Best Practice Guideline (EBPG) targets for serum ferritin (>100 ng/ml) and transferrin saturation (TSAT >20%) were met in 85% and 74% of patients, respectively. Iron and TSAT status remained stable throughout the OP. Discontinuation was relatively low (8.5%).

The proportion of patients attaining EBPG target hemoglobin (Hb) (≥11 g/dl) increased from 52.4% at baseline (end RP, pre-OP) to 61.3% (OP, assessments made over months 4–6), representing a 9% increase in Hb target achievement. The median weekly dose during the RP and OP were 6433 IU and 6767 IU, respectively. Moreover, patients given epoetin beta SC received a 20% lower dose compared with the IV route (p=0.0022) with median dosages reducing from 7700 IU for IV route to 6000 IU SC

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route. The proportion of patients with dose adjustments during OP (41.1%) was similar to RP (40.2%), suggesting moving to epoetin beta is readily achieved. During OP, therapeutic effectiveness and tolerability of epoetin beta was rated as 'good–very good' by >92% and 99% of patients, respectively. From 492 patients receiving treatment SC, scores for injection site pain (0 [pain-free] to 10 [strong pain]) were recorded in 953 cases during OP. Overall, 84% of patients recorded little or no pain (scores 0–2). No score >7 was recorded.

GAIN indicates that moving stable HD patients to epoetin beta may provide improved efficacy, which is reflected in more patients attaining EBPG target Hb levels. Moreover, switching to epoetin beta appears to be easily achieved without need for increased dose adjustment and little, or no, pain at the injection site. GAIN 2004 is ongoing, full data analysis is expected to provide further insight into the merits of switching to epoetin beta and European anemia management.

Vascular catheters as a first and last vascular access in patients on haemodialysis

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PP

Central venous catheters (CVC) are methods of choise for both – urgent initiation at haemodialysis and as a final solution. CVC are syliconic, may posses double or tripple lumen, flex are radiopaque, less flexibile and with low thrombogenic potential. If permanent, they have two cuffs. The first CVC was introduced by JW Broviac in 1973; the catheter was 90 cm long and it was placed in subclavian vein. The permanent CVC was modified by Robert Hickman by introduction at 2 cuffs and by withening at the lumen. First, it was used for the chemiotherapy and thereafter for haemodialysis. During the last 10 years, in Center for renal disorders, 809 CVC were introduced for the treatment patients with acute renal failure who were unable to perform peritoneal dialysis. In addition on, CVCs were used for patients with either peritoneal dialysis failure or AVFistula/ graft failure (infection, thrombosis).

The permanent CVC as a final vascular access option was introduced in 1996 in our center and until today it has been placed in 25 patients by Seldinger`s method. The usual possitions were jugular and subclaviar vein, rarely femoral vein.

CVCs present a safe, urgent, first and last vascular access in patients with acute and endstape renal failure.

Gain effectiveness in Anemia treatment with NeoRecormon® (GAIN) a 2004 interim analysis of

NeoRecormon® use in Europe

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PP

Recent studies acknowledge the continued need for improvement in renal anemia management globally. GAIN compared anemia management with epoetin beta (NeoRecormon® – F. Hoffmann La-Roche Ltd), epoetin alfa or darbepoetin alfa (DA) in >4500 stable hemodialysis (HD) patients from 217 centers in 13 European countries. Patients previously treated with epoetin for ≥12 weeks (retrospective phase [RP]) were switched to epoetin beta (intravenous [IV] or subcutaneous [SC]) for 6 months (observational phase [OP]). Interim data are presented for 1005 patients following removal of 63 patients due to transfusion (6), bleeding (10) or infection (47).

The cohort was of mean age 60.9 years, 56.4% male, with normal blood pressure. The primary disease etiology was diabetic nephropathy (22.9%) and glomerulonephritis (27.0%). During the RP, patients received epoetin alfa (69.9%), epoetin beta (20.9%) or DA (9.2%). The IV:SC ratio was ~5:1 during RP and 1:1 during OP (26% switch to SC). At baseline (end RP, pre-OP), European Best Practice Guideline (EBPG) targets for serum ferritin (>100 ng/ml) and transferrin saturation (>20%) were met in 85% and 74% of patients, respectively. Iron and transferrin saturation (TSAT) status remained stable through the OP. Discontinuation was low (8.5%).

The proportion of patients attaining EBPG target hemoglobin (Hb)(>11g/dl) increased from 52.4% at baseline [end RP, pre-OP] to 61.3% [OP, assessments made over months 4–6] respectively, a 9% increase in Hb target achievement. The mean doses under epoetin beta SC compared to either epoetin alfa IV or DA IV was associated with a reduction in dose requirement of 1450 units (adjusted for baseline dose and Hb, and previous treatment, both $p<0.0001$), representing a potential 24% dose-saving when extrapolated to a typical clinical setting dose of 6000 IU/30 μg/week. The conversion factor (CF) seen in patients switched from DA IV to epoetin beta SC (starting dose 50–100 μg, n=14) was 1:185, although a limited cohort, is in accord with 1:177 CF reported in the large European Survey of Anaemia Management (ESAM) 2003 cohort.[1] Patients switched to epoetin beta from DA showed improved Hb control in that variability (SD) was reduced (0.93 vs 1.22)

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resulting in a shift towards the mean (11.31 g/dl) for minimum, lower quartile, upper quartile and maximum Hb.
GAIN suggests that switching stable HD patients to epoetin beta from either epoetin alfa or DA conveys improved efficacy, with more patients attaining EBPG target Hb levels. Moreover, this is achieved with a lower dose of epoetin beta SC compared with epoetin alfa IV or DA IV and at a CF <200 vs DA, comparable with ESAM 2003. Epoetin beta may also provide improved Hb stability vs DA and, thus, reduced potential for Hb 'overshoot'. GAIN 2004 is ongoing, full data analysis should provide detailed insight into the potential benefits of epoetin beta use across Europe.

GAIN 2004: demonstrating continued improvement in anemia management across Europe

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PP

GAIN 2004 was conducted to provide a cross-sectional survey of renal anemia management across Europe. Epoetin efficacy in achieving European Best Practice Guidelines (EBPG) target haemoglobin (Hb) >11g/dl was evaluated in 3855 hemodialysis (HD) patients from 217 centers in 13 countries. Conducted alongside publication of revised EBPG for anemia management, and following the 2003 European Survey of Anaemia Management (ESAM)[1], GAIN 2004 is the first survey to provide detailed insight into anemia management in the broader European Community. Data was evaluated from stable adult HD patients with renal anemia and treated with epoetin for ≥12 weeks. The number of centers varied, with Germany making the greatest contribution (n=63).
The primary etiology of chronic kidney disease in this cohort (diabetic nephropathy, 23.7%; glomerulonephritis, 21.6%) was similar to ESAM 2003. The overall median and mean weekly epoetin dose was 6000 IU and 7637 IU, respectively, again similar to ESAM 2003. Median Hb levels attained in each country were generally >10 g/dl. Patients achieving EBPG target Hb >11 g/dl varied between countries from 20.7–94.9% demonstrating continued variability in Hb attainment. This was further highlighted in five countries where >25% of patients had Hb <10 g/dl, and 5–25% of these patients were managed to Hb <9 g/dl. Similarly, between-country variability was observed in iron status. Approximately 45% of sites only reported ferritin levels and transferrin saturation (TSAT), the proportion of these patients not achieving EBPG iron targets (serum ferritin >100 ng/ml; TSAT >20%) was 10% and 23% (based on mean of all retrospective phase assessments), respectively, possibly reflecting bias associated with poor reporting.
GAIN 2004 demonstrates a pan-European trend towards improved treatment relative to ESAM 2003 and achievement of EBPG 2004 Hb targets. Moreover, areas for continued improvement are described such as potential for increased attainment of EBPG targets through close management of iron status. GAIN 2004 is ongoing and GAIN 2005 is anticipated to provide further insight into European anemia management.

Central venous catheter complications in patients on hemodialysis

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PP

Central venous catheter (CVC) is temporaruy vascular access and its insertion may leads to a substantial complications. The purpose of this study was to show the occurrence of complications after CVC insertions. The CVCs were inserted into the subclavian, internal jugular and rarely in external jugular vein – up chest approach and sometimes into femoral and big saphen vein – lower vascular approach. CVCs were inserted by surgeons using a Seldinger technique under local anaesthesia with X-ray monitoring. Uper chest approach may be followed by the next comlications:

- Pneumotorax – prevention is to avoid pressure during introduction guide wire
- Cardiac tamponade – means lesion superior vena cava and pericardium – prevention is the same as prevention for pneumotorax
- Arrhythmia during the introduction of guide wire into the right atrium – prevention is EKG and X-ray monitoring
- Haemotorax, lesion of big blood vessels, heart and d. thoracicus are rare complications
- Central vein thrombosis and stenosis of blood vessel are frequent at subclavia approach and clinical manifested in 3% patients with CVC
- Lesion of the artery during rude manipulation with catheter may be prevented by careful work
- Catheter fragmentation – bed quality of catheter, rude placement and irregular handling
- Catheter thrombosis and one-way obstruction are the most frequent complications
- Septic catheter infection
- Skin infection around the catheter and allergic reaction are relative rare

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Lower vascular approach into the femoral vein and big saphen vein are recommended when the upper chest approach is not possible. Complications are: deep vein thrombosis, pulmonary embolism, laceration and kinking of catheter. Femoral approach should not last more than 7 days, while upper chest approach may lasts up to one month.
On our clinic during 2004, 97 CVC were placed. The places of insertion were: jugular approaches 60%, subclavia approach 20%. Percent of infections were 16%. Only one patient had clinical manifested subclavia thrombosis that was treated conservatively. This low incidence of complications can be prevented by regular insertion, handling and manipulation during dialysis procedure.

Laparoscopic cyst decortication of multilocular renal cysts- transperitoneal approach

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PP

Laparoscopic cyst decortication (LCD) is a contemporary way of renal cysts treatment. The purpose of our work is to promote this method as one of many therapeutic methods in this area. A solitary multilocular renal cyst belongs to the heterogeneous group of diseases, named polycystic kidney disease. All of these diseases belong to a group called cystic renal disease. They cause the development of pathological cavities filled with liquids in renal tissue. They can present inherited, acquired or developmental disorders, and are secondary to obstruction of the tubules, with consecutive increased intratubular pressure. Only cysts (solitary or multicystic) larger than 7 cm are significant for surgical procedures. Our subject are only isolated, solitary, multilocular cysts, known as cystadenoma papillare, or nephroma cystica benigna.
Patients and methods: Four men with a mean age of 51,3 years underwent laparoscopic cyst decortication in the period from june to december 2004. All of them had parapyelic medial renal cysts, of 7 to 10 cm in size. Three patients had a cyst on the left kidney, and one patient had it on the right kidney. None of them had any of intraoperative or postoperative complications. The operative position was slightly oblique with the affected site elevated about 45 degrees. Four ports were introduced through trasperitoneal small incisions on the medioclavicular, front axilar line and periumbilicaly. It was followed by cyst decortication and fluid aspiration and drainage. After the operation, a biopsy of the cystic wall would be taken for pathological evaluation. The average time of the operation was 55 minutes. The patients were mobile the same day, they went home the next day, and were able to go back to work after a week. There were no relapses three months later.
Transperitoneal renal cyst decortication is recomended in cases of big solitary, medial renal cysts, where aspiration and sclerotherapy would carry a high risk of other tissue leisure.
This method is a minimally invasive, fast, safe, efficiant, low risk operation with a high percent of success and a very low rate of relapses.

20 years of dialysis treatment in the municipality of Berovo (1985-2005)

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PP

Introduction: Patients with chronic kidney insufficiency (weakness) in the final phase are treated by dialysis. Dialysis is a treatment of cleansing the blood from the toxical materials which overfill in it because of the reduced elimination through the kidneys.
Nowadays, there are two types of dialysis:
1. Haemodialysis
2. Peritoneal dialysis
The purification of the blood during dialysis is carried out in two ways:
1. by diffusion
2. by ultra filtration
Aim: The aim of this paper was to show the number of those affected by this disease in the municipality of Berovo during a period of 20 years (1985-2005). Patients whose diagnosis was a chronic haemodialysis during a period of 15 years were transported in the Medical Centre in Shtip, but since 2000 they have been transferred in the Medical Cente -in Delcevo.
Materials and Methods: Statistical data from those registered with chronic haemodialysis taken from the Sanitary Service-Berovo.
Results: In a period of five years (1985-1990) five patients underwent dialysis (3 men and 2 women, that is, 60% men and 40% women). In the following period (1990-2000) there were 15 new cases of those affected with chronic dialysis - 10 men (66%) and 5 women (34%). During this period of 15 years, out of 20 patients 12 died - 10 men (18,3%) and 2 women (17,5%) and 8 of them (40%) survived. In the period between 2000 and 2005, 7 more cases were registered - 5 men (71%) and 2 women (29%). Three (20%) of them died: two women and one man. Twelve of them (80%) are still live (7 men - 58% and 5 women - 42%). From all 27 patients registered on dialysis in the period of 20 years only one man is still alive (he is 42 years old). For 20 years he has been regularly visiting the Medical Centre in Delcevo 3 times a week.

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Successful control of secondary hyperparathyroidism by pulse of 1, 25 dihydrocholecalciferol

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PP

Secondary hyperparthyroidism (SHPT) remains a serious complication of end stage renal disease. Pharmacological treatment with pulse of 1, 25 dihydrocholecalciferol (1, 25 $(OH)_2$ D_3) is the therapeutic option that could delay or replace surgical procedure. The aim of our study was to evaluate efficiency of 1,25 OH2D3 pulse treatment in patients on maintenance hemodialysis (HD) with severe SHPT. The study was conducted as prospective, opened, interventional one and included 15 pts (8 male, 7 female) age 41.6 ± 9.5, on HD for 50.9 ± 38 months, whose serum intact parathormone (iPTH) level was > 1000 ng/ml and/or size of at least one parathyroid gland >1 cm on sono examination. Serum Ca, PO_4, $CaxPO_4$, alkaline phosphatase and iPTH levels were compared at the outset of treatment (1, 25 $(OH)_2$ D_3 - Rocaltrol® F. Hoffman La Roche, Basel, Swiss, 3 times weekly 0.5 - 4 μg) and 12 weeks later. Therapeutic success was reached in 12 out of 15 pts (80%). Serum iPTH significantly decreased (0: 1212 ± 449, week 12: 473 ± 493, $p < 0.01$), and serum Ca (0: 2.124 ± 0.237, week 12: 2.536 ± 0.548, p= 0.08), PO4 (0: 1.686 ± 0.22, week 12: 1.724 ± 0.538, p= 0.26), CaxPO4 (0: 3.593 ± 0.685, week 12: 4.385 ± 1.658, p= 0.62) and alkaline phosphatase (0: 384 ± 477, week 12: 287 ± 400, p= 0.69) were similar. Our results suggest that 1, 25 $(OH)_2D_3$ pulse treatment is efficient therapeutic alternative in severe SHPT.

Sodium and ultrafiltration profiles in dialysis and their effect in reducing disequilibrium syndrome and hypovolemic symptoms during dialysis

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PP

The aim of this work was to present the effect of programmed ultrafiltration and sodium with dialisys machines Fresenius 4008E on 12 patients in our Centre and the effect on decreasing of disequilibrium syndrome and hypovolemic symptoms during dialysis.

At no other costs - the same dialiseres lines and solutions for dialysis are used with pre-programmed ultrafiltration and sodium profiles.

A sodium profile is a conductivity change, pre-programmed into the dialysis machine, combined with changes of sodium concentration in the dialysis fluid.

An ultrafiltration (U-F) profile is a pre-programmed change of the speed of the ultrafiltration pump together with defined changes in the UF rate.

In our researching U-F profile number has been used, where the ultrafiltration has two phases-phase on active loosing fluid and phase on refilling of fluid from extracelular to intravascular space which phases alternate changes. The sodium profile number which follows the course of U-F profile, so the plasma sodium concentration increases at a high UF rate and decreases at a low UF rate. This ensures that balance neutrality is maintained.

Our work was an impact of these profiles in 12 patiens (7male and 5 female) all with cardiovascular deseases during 9 months profiled dialysis and I concluded that the arterial tension was stabilized and the subjective difficulties were reduced during dialysis.

Acute renal failure (ARF) as consequence of acute virus myocarditis: a case report

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PP

The aim of our study is to present the case with acute renal failure as a consequence of acute virus myocarditis.

A man at 29 years of age hospitalized because of a febrile gastroenterocolitis at the infective ward became anuric, increasing serum urea to 21mmol/L and creatinine to 210 mmol/L, also decreased blood pressure to 110/70 mmHg. Ultrasound (US) revealed swelling of both kidneys. Development of ARF was suspected and the patient was transferred at the internal ward where standard supportive therapy was administered. However, the clinical condition got worse starting with coughing, dispnea and orthopnea. Physical examination of the heart showed no arrhythmia with heart rate of 75/min at ECG. We performed radiogram of the chests that showed slight edema and pleural effusion in the right lung. Echocardiography revealed increased dimensions of the left ventricle with decreased systolic function. So, a cardiotonic therapy, with diuretics and corticosteroides was administered and the condition was improved without persistence of the subjective discomfort. Ten days later, the radiological control of the chests and US of the kidneys were slightly improved as it was with findings on echocardiography. In the meantime detection of the virus in serum revealed an increased titer 1:64 of entero virus - specific group antigen Coxackie and ECHO viruses.

The case was assumed as acute viral infection with gastrointestinal and cardiovascular system as target organs. The decreased heart contractility conditioned hypoperfusion of the kidneys with manifested ARF. This case shows that a

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complete evaluation and serious treatment is needed in the treatment of virus infections.

Plasma exchange in the treatment of multiple sclerosis: a case report

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PP

Plasmaexchange (PE) has been established as a treatment tool in patients with several neuroimmunologic diseases, but the role of PE in the treatment of patients with Multiple Sclerosis (MS) remains unclear. PE has no known role in altering the long-term clinical course of MS. However, there is good evidence that PE may be of benefit in the treatment of severe relapses in MS, if corticosteroids fail. Case history: We present a 28-year old woman with a 8 year history of relapsing-remitting MS with frequent relapses, who experienced a severe life-threatening relapse in the first week post partum. Neurologic evaluation revealed impairment of consciousness (somnolence), severe spastic paraplegia, but also severe weakness of her right upper limb, dysarthria, dysphagia, facial weakness on the right, bladder and bowel incontinence, painful tonic spasms of lower limbs, visual impairment. An Expanded Disability Status Scale (EDSS) score was 9.0. MRI examination of the brain showed extensive periventricular white matter lesions, but also wide-spread demyelinating lesions located in the brain stem, cerebellum, basal ganglia. Treatment with high-dose steroids and Mycophenolate mofetil (CellCept, 1 g/day) was started combined with PE (7 procedures at 2-3 day intervals during which 2200-2500 ml plasma were exchanged). One month later she experienced marked improvement-the swallowing and speech were almost normal, the strength of her right upper limb markedly improved, but also the strength of the left lower limb. Her right lower limb was still severe paretic. EDSS score was 7.0. Conclusion: Plasmaexchange and concomitant immunosuppressive therapy (Mycophenolate mofetil, steroids) may improve and hasten recovery from an attack of severe inflammatory demyelination as occus in MS.

Catheter-related spondylodiscitis (SD) on hemodialysis (HD) patients

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PP

Spondylodiscitis is a rare but very serious complication, which can lead to permanent neurological damage, or even death. There are only a few cases referred in the international literature as a result of bacteremia, after infection of the vascular access of HD patients. There are pathognomic MRI findings helping in differential diagnosis from destructive spondyloarthropathies and early diagnosis of SD. Early diagnosis is significant for prompt treatment, and prevention of neurological complications. A 72-year-old female HD patient presented high-grade fever, severe neck pain and left upper limb paresis, 4 weeks after the A-V fistula replacement by an external jugular catheter. Lab findings (WBC: 14.3 x103/mm3, NEU: 85.5%, CRP: 37.14mg/dl, ESR: 65 /1st hour), were compliant with SD. MRI findings (Pathological intensity signal of C5-C6 vertebral bodies, as well as the corresponding intervertebral disc, with pathological absorbance of the radio-paramagnetic substance), were pathognomic for SD. CT findings were not conclusive for SD diagnosis. Clinical symptoms, lab findings, and MRI findings, subsided 15 days after anti-staphylococcal therapy (Fusidic acid). Neurological symptoms although were partly subsided, remain until today.

Morbidity and mortalyty of dialysis patients in period from 1982-2005 in our dialisis centre

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PP

On the basis of facts from the literature as well as our own 22 years of experience, we showed interdialisis morbidity (KVS 95%, RS 80%, GIT 95%, genitourinary tract 35%, surgical complicatons 49%, ORL 65%, ophtalmological complication 34%). Intradialysis morbidity was (permanent 55%, frequent 5%, rare 10%). The relation of newcomer and deceased patients showed a relative similarity (the influx and flowing out of the patients was balanced). The basical etiology of mortality in our center and the world standards showed: KVS (Cardiovascular system) 55% (50%), Infectious disease 7% (10-15%), hepatitis 7% (10-15%), gastrointestinal tract 4%, CNS (central nervous system) 7%, RS (respiratory system) 10%. The maximal keeping of integrity of patients with CRF means a regular tretment and prevention of multifactorial urinary factors and increased health culture.

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Case report of a patient with discontinuation from dialysis after 5 years of treatment

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PP

The aim of this case report was to present a patient with HBI in terminal phase, who after five years of regular chronic hemodialysis program (CHDP) was excluded from the program. A 66-year-old patient. He was hospitalized for the first time at the Clinic for Nephrology Skopje in October 1998 as an emergency case in extremely difficult general condition, febrile and with high values of degradation products (DP). He had not had a previous history for kidney disease and other diseases connected to kidney insufficiency. He was diagnosed as HBI terminalis and treated with therapy of HD for four hours, three times a week. From 10/98 to 01/04, the patient was regularly dialysed and the dialyses were with normal course and the patient was stabile. The measurements of DP were the following: Ur (s) 32,2.... 16,5; Kr (s) 1180....358mmol/l; Ac.urik.710....369mmol/l and of the electrolytes K(s) 7,2....5,1mmol/l. In January 2004, on two consecutive dialysis after the second hour the patient had switching, fierce cramps, sweating, coagulation of the blood in the dialyser and the artery-venes lines. Urgent analysis was made, hemostasis and diuresis were measured. The measurements of DP were lower. Then, two more dialyses were made with four hours once a week and with consultation at the Clinic for Nephrology the patient was excluded from the dialysis program. The patient was observed at the centre for HD, we make monthly laboratory-biochemical analysis, measure TA and AT. The measurement for Ur (s) 15....22mmol/l; Kr (s).9.5....330mmol/l; K (s) 5,5....7mmol/l and TA 130....155/80....90mmHg and diuresis of 1,5l/24h. The patient is in good general condition, without symptoms, with normal blood results and he is not under dialysis for almost 15 months but he is under regular control. The conclusion was that it is possible to exclude a patient from HDP, even after 5 years of treatment.

Rehabilitation of the dialysis patients from our centre in the period from 1983-2005

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PP

The aim of our paper was to present our 22-year-experience with rehabilitation of patients on hemodialysis.The criteria of EDTA were applied for a complete rehabilitation of patients. The analysis showed: Ist group 15, IInd group 17, IIIrd group 3, IVth group 24, Vth group 40, VIth group 14. From 45 females in the programe none of them is employed, 19 are housewives and do not work anything, 4 are housewives and do all the housework and one does all the hard work (look after cattle and run the village household). As far as males are concerned, four of them work fulltime, one works four hours and 15 are retired. Our 22-year-experience showed the following survival: deceased patients (50%-25 lived between 2-5 years, 35%-16 to 1 years,15%- 6 between 5-10 years), live patients (50%-26 are between 2-5 years, 25%- 18 are between 5-10 years, 20%-13 to 1 year, 5%-7 are over 10 years.

Case report: a patient with dialysis dysequilibrium syndrome

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PP

Dialysis dysequilibrium syndrome (DDS) consists of systemic and neurologic signs and symptoms - headache, nausea, womitus, fatigue, anxiety and somnolence. Critical ill patients have high blood pressure, convulsions and coma. We present a successful recovery after severe case of DDS. A 51-year-old woman was admitted at the Department of Intensive Care Unit, Military Hospital, Skopje, because of the onset of coma during the regular hemodialysis. The patient suffers of polycystic kidney disease and she is on chronic hemodialysis program one year ago. After one year use, the AV fistula does not provide adequate flow and new AV fistula was performed on the right arm. Next year, because of thrombosis of the fistula the patient was undergone on hemodialysis (HD) via temporary vacular access - femoral catheter. At the beginning of the dialysis, the patient was hemodynamicaly stable (BP = 160/90, HR = 90/min), and fully conscious. The lab findings were: BUN: 40 mmol/l, SCr: 768 mmol/l, Potassium: 5,2 mmol/l, Natrium: 141 mmol/l. During the third hour of HD the patient become somnolent and fell into coma. Neurologic investigation was performed and the acute neurologic disorders, like cerebral thrombosis and hemorrhage were excluded. The lab findings after the HD were BUN: 13 mmol/l, SCr: 220 mmol/l, Potassium: 3,8 mmol/l, Natrium: 134 mmol/l., Glucose: 6 mmol/l. Plasma osmolality was low = 287 mOsm/l, Cl: 98 mmol/l, HCO3: 23 mmol/l. pH = 7,4, pCO2: 38 mmHg, Anion gap = 23. The breathing was spontaneous, the heart rrhytm was regular, so the treatment was symptomatic - infusion of Glucose 5%, and Sodium Clorid 0,9 % were given. The coma last for 20 h. and the patient become conscious, the contact was established. After 2 days in CCU, and in a well being, the patient was discharged. After one year, the Gore-Tex Vascular Graft was posed (L - T anastomosis with the right brachial artery and T-T anastomosis with right basilic vein). One month

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later, the thrombosis on the graft occured and next HD were conducted via right subclavian catheter. The current question concerning the management of HD. To avoid DDS, HD should not to be aggressive and the reduction of the urea not to exceed 30%.

The value of allograft biopsy in kidney transplantation: one center experience

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OP

Kidney allograft biopsy remains the only diagnostic method for the accurate diagnosis of acute rejection and aetiology of allograft dysfunction. In spite of this there is still some dispute concerning its safety and usefulness in grafts with chronic dysfunction. Material: Among 543 patients (pts), 38.84 year old (range 16.19 - 70.54) who received a renal allograft and had a complete follow up (period 1.1.87 - 31.12.2001), 269 pts had at least one kidney biopsy. Acute rejection (AR), anti-rejection treatment, chronic allograft nephropathy (CAN), chronic glomerulopathy (CG), acute tubular necrosis (ATN) and cyclosporine A (CsA) toxicity, relapse of primary renal disease, de novo glomerulopathy, interstitial nephritis were recorded and their relation to patient/graft survival and delayed graft function (DGF) were studied. Results: Ninety one pts had one, 39 pts two and 5 had 3 AR episodes (frequency of AR: 24.67 %). According to Banff classification the AR were of type IA: 40,69%, IB: 11.6%, IIA: 14.539%, IIB: 18.02%, III: 2.3%, borderline: 11.04% and antibody dependent AR: 1.74%. The frequency of early rejection (ER) was 60.3% (first 3 months), late rejection (LR) was 36.6% and ER+LR was 3.1%. The anti-rejection treatment given for the 1st rejection episode was solu-medrol (SM): 35%, anti-lymphocyte globulin (ATG): 4.0% and SM+ATG: 61.0%. In patients with and without DGF the frequency of AR was 41.46% and 21.46% respectively. ATN and CsA acute toxicity were recorded in 23.0 % and 18.6% of cases respectively. CAN and CG were recorded in 36.1% and 26.4% of cases respectively. Simultaneous CAN + CG was present in 22.67% of cases. Primary renal disease relapse was found in 4.5%, de novo glomerulopathy in 0.4%, interstitial nephritis in 3.7% and infection in 2.6% of cases. Arteriosclerosis of the allograft was recorded in 31.0% of cases. At the end of follow up period (31.1.2005) 70.89% of pts with AR episode had lost their graft compared to 40.09% graft loss of pts without AR episode. The death frequency of pts with or without AR at the end of follow up period was 13.43% and 15.5% respectively. There was no pt or graft loss because of kidney biopsy. Conclusions: The frequency of acute rejection is much higher in pts with DGF. The AR influences significantly graft but not patient survival. Graft biopsy is essential for the correct diagnosis of the cause of allograft dysfunction. There were no serious complications.

Kidney transplantation in patients with systemic lupus erythematosus: a single-center experience from Greece

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OP

Evaluation of the outcome of 26 SLE patients who underwent renal transplantation in comparison with 26 non-SLE controls matched for age, sex, type of allograft and date of renal transplantation. Methods: The patients received their transplants over a 215 month period between May 1985 and April 2003. All study subjects received cyclosporine or tacrolimus as part of their immunosuppressive regimen. The population was predominantly women (89%), and the mean age at the time of transplantation was 34.4 + 9.2 years. The duration of disease before transplantation was 127+77 months and the duration of dialysis was 30+29 months. Fourteen transplants (54%) were from living-related donors and twelve (46%) were from cadaveric donors. Patient and graft survival estimates were calculated with the Kaplan-Meier product limit estimator and survival estimates were compared with the log rank test. Results: The mean follow up time for the SLE patients and controls were 79+61 months and 89+57 months, respectively (P=0.66). During the follow up period 13 SLE patients and 4 controls lost their allografts. The overall graft survival rates for lupus patients were 92% at 1 year, 72% at 5 years and 46% at 10 years while the respective values for the control group were 92%, 92% and 84% (P=0.009). Patient survival in the lupus group was 88% at 1 year, 77% at 5 years and 77% at 10 years vs 96%, 92% and 92% in the control group (P= 0.263). Chronic allograft nephropathy was the major cause of graft loss. Recurrent lupus nephritis was detected in two patients whereas six patients developed extra-renal lupus manifestations. In terms of morbidity, SLE patients compared to controls had significantly higher rate of hypertension (P=0.038), cardiovascular disease (P=0.002) and infections (requiring hospitalization) (P=0.004). On the other hand, osteoporosis and anemia requiring erythropoietin therapy did not differ significantly between

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the two groups. However the SLE-patients needed higher erythropoietin doses in order to respond. Conclusions: The results of the present study indicate that SLE probably patients have inferior graft survival rate whereas patient survival is not different. In addition, the SLE patients seem to have a higher incidence at post-transplant complications.

Protocol biopsies in kidney transplant recipients: histological findings and allograft function at 1-year

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OP

Protocol renal allograft biopsy has been considered as a potentially valuable diagnostic tool in identifying the histological changes associated with graft prognosis. However, the association with the findings of chronic allograft nephropathy (CAN) before the deterioration of the graft function and histological changes of subclinical or borderline rejection (SR; BR) remain less clear, especially concerning the possibility for pulse corticosteroid therapy and late allograft failure. Our study aimed to identify SR/BR and histological markers of chronic allograft nephropathy (CAN) in protocol biopsies at 1 and 6 months in living related kidney transplantation and the possible implications of these findings on the graft function at 1, 6 months and 1 year.

20 paired allograft biopsies at 1 and 6 months were reviewed according to the Banff scoring scheme. Among all biopsies only 10% (4/40) showed no histopathological lesions. In the first month BR was shown in 35% and SR in 10% of the patients. At 6 months the proportion of these findings was even higher 40% and 30%, respectively. Furthermore, the mean CAN score (sum of histological markers for chronicity) increased significantly at 6 months biopsy, 2.15±1.5 vs. 4.3±2.47 ($p<0.01$).

Kidney graft function, i.e. mean calculated creatinine clearance (cCrcl) deteriorated from first to the 6 months value, but significantly improved at 12 months (71.9±17.2 vs. 63.2±22.6 vs. 69.4±23.6, respectively). When divided according to the progressive rise in serum creatinine levels between 6 and 12 months (>20% or >200µcmol/l), the group with higher progression (n=5) had significantly increased body mass index at 12 months, much shorter dialysis duration pre-transplant, higher percentage (40%) of experienced delayed graft function and tendency towards older donors pool (67.6±9.9 vs. 56.9±14.3 years, p=0.09). The mean CAN score at 6 months biopsy in this group was also significantly higher (6.2±1.9 vs. 3.7±2.3) with predominant histological changes of glomerular and vascular structures (cg: 0.8±0.45 vs. 0.2±0.41, p=0.04 and cv: 1.6±0.55 vs. 0.73±0.7, p=0.02; respectively). This group consisted of 2 untreated patients diagnosed as BR and SR at 1 month biopsy who underwent an episode of acute rejection (AR) at 6 months biopsy, 2 untreated patients classified as SR at 6 months biopsy (one with early onset of postransplant AR) and 1 patient with BR findings at 6 months and episode of AR at 10 months after transplantation.

In conclusion, 1 and 6 months biopsy may be valuable for determining of BR/SR and its possible impact on the outcome of the renal allograft function. The untreated histological findings of BR and SR at 1 and 6 months protocol biopsies in kidney recipients from older donors and in the presence of increased BMI, might lead to a rapid impairment of the graft function throughout an accelerating process of chronic allograft nephropathy.

Delayed graft function: predictive factors

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OP

Delayed graft function results in poorer graft survival. In the present study we evaluate the influence of different immunosuppressive regimens on renal recovery after ischemia-reperfusion injury and progression of renal function in the 1st year after transplantation. Patients-Methods: Patients were divided in 4 groups according to the immunosuppressants received: 1.Rapamycin (Rap) + MycophenolateMofetil (MMF) + Methylprednisolone (MP) + Daclizumab (Dmab) (n=44) 2.Tacrolimus (Tac) + MMF + MP + Dmab (n=39) 3. Cyclosporine (CsA) + MMF + MP + Basiliximab(Bmab) (n=30) 4.Antithymocyte Globulin (ATG) + MMF + MP and CsA after ATG's withdrawal (n=40). Data were analyzed using ANOVA and linear regression. The need for hemodialysis post-transplantation was defined as delayed graft function. Results: There was no statistically significant difference between the 4 groups in terms of gender, time on dialysis before transplantation, histocompatibility, donor's age and cold-ischemia time. On the other hand, age (49.8, 50.4, 49.8 and 43.5 years, p 0.05), preformed cytotoxic antibodies (22, 39, 27, 34 %, p 0.05) and time on delayed graft function (12, 7, 3, 6 days, p 0.05) were found to significantly differ. The delayed graft function time was found to depend on the immunosuppressive regimen, donor's and recipient's age (p 0.05). The creatinine clearance demonstrated a statistically

significant difference between the groups in the 1st month after transplantation, though no further difference was observed until 12th month. Conclusions: The type of immunosuppressive therapy seems to substantially influence the time of renal graft recovery after ischemia-reperfusion injury, though without showing evidence of additional impact on long term graft function. Especially Rap, probably due to its potent antiproliferative effect, prolongs the time of graft recovery after renal transplantation.

Persistent afebrile diarrhea in renal transplant recipients

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OP

The aim of the present study was to investigate the etiology of afebrile persistent diarrhea in renal transplant recipients. Within a time interval of 6 months (4/5/04 to 22/11/04) 13 renal transplant patients (8 male, 5 female, mean age 47.50+12.05 years, range 30 to 65 years) were admitted to our center due to an intermittent or continuous afebrile diarrhea of at least two months duration. Laboratory investigations of the patients did not reveal any microbial cause. Colonoscopy was performed in 12, esophagogastroduodenoscopy in 10 and capsule endoscopy in 11 patients, respectively. The mean transplantation time was 72+56.40 months (6-192), the immunosuppressive regimen included Methylprednisolone in 13, Cyclosporine in 3, Tacrolimus in 8, mycophenolate mofetil (MMF) in 12, Sirolimus in 3 patients. Mean creatinine levels were 2.71+1.09 mg/dL (1.2-4.6). Gastroduodenal and/or colorectal biopsies were obtained from all patients. In 8 out of the 13 patients diarrhea was attributed to MMF based on histological abnormalities that were found only in the colorectal biopsies. Dose reduction or discontinuation of MMF resulted in complete remission of diarrhea. Capsule endoscopy was performed in 6 out of the 8 patients with histological abnormalities compatible with MMF colitis and in 4 of them the findings were suggestive of MMF toxicity. In the remaining patients, diarrhea was attributed to small intestine diverticulosis (1 patient), nonspecific enterocolitis that responded to dose reduction of sirolimus (1 patient), calcium containing medication (1 patient) and CMV-colitis (1 patient), while in one case no specific cause was identified. In conclusion, MMF colitis is the most common cause of persistent afebrile diarrhea in renal transplant recipients. Capsule endoscopy is a promising diagnostic procedure for the investigation of this clinical entity and dose reduction or withdrawal of MMF leads to a complete remission of diarrhea.

Early protocol renal allograft biopsies and graft outcome: effects of treatment of borderline and subclinical rejections at first month on histological changes and function at 6 months

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OP

The aim of the present study was to identify and to evaluate subclinical and borderline rejections (SR/BR) and histological findings of chronic allograft nephropathy (CAN) in protocol biopsies at 1 and 6 months after living related kidney transplantation and to determine whether treatment of SR and BR in the first month postransplant has a beneficial effect on graft histology and/or function at 6 months. Thirty- five paired allograft biopsies performed at 1 and 6 months were evaluated in accordance with the Banff scoring schema. Among all biopsies only 7% (5/70) showed no histopathological lesions. BR was found in 13/35 (37%) and 11/35 (31.4%), and SR in 14/35 (40%) and 20/35 (57.1%) of patients, on 1 and 6 months biopsies, respectively. The mean HI (histological index/total sum of scores for acute and chronic changes), increased significantly at 6 month biopsy 5.14 ±3.00 vs. 7.94 ± 3.80 ($p<0.001$). Similarly, the mean CAN score (sum of histological markers for chronicity) of 1.60 ± 1.38 at 1 month, increased significantly to 4.37±2.24 ($p<0.000$) at 6 months biopsy. The group of treated BR/ SR found at 1 month biopsy had mean HI score of 6.71 ± 1.98, which increased to 7.43 ± 2.51 at 6 months biopsy (111 %). The proportion of these changes in untreated BR/SR group have been increased from 4.80 ± 1.99 to 8.00 ± 4.60 (167 %). However, there was no significant difference in the graft function, i.e. calculated creatinine clearance from 1 to 6 months, in both groups.

In conclusion, a protocol 1-month biopsy may be valuable to determine a high prevalence of BR or SR in stable allografts. The presence of an untreated BR and SR found at 1-month biopsies showed greater susceptibility for histological deterioration on the 6 months biopsy, accelerating the process of chronic allograft nephropathy. A beneficial effect of the treatment of BR and SR should be confirmed at the follow up of the graft function at 1 or 2 years.

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Our experience with vascular complications in living vs cadaveric renal transplantation

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OP

A variety of technical complications, including vascular, can threaten the transplant in the postoperative period. Vascular complications are commonly due to to technical problems in establishing vascular continuity, or to damage that occurs during donor nephrectomy or preservation. The purpose of this study is to evaluate rates and counts of vascular complications after renal transplantation and to compare the outcome by donor type. A total of 224 kidneys (171 from living related and 53 from cadaveric donor) were transplanted between 1995 and 2001 at the Institute of urology and nephrology in Belgrade. Patient's mean age was 36,7+-10,7 years. Statistical analysis is estimated by using of Fisher's test and Hi-squared test. Major vascular complications including renal artery thrombosis, renal vein thrombosis and haemorrhage were analyzed. Some of these complications are noted in 17 (7,6%) patients, 6 from living and 11 from cadaveric donor. Relative rate of complications was higher in cadaveric donor group ($p < 0,05$). Renal artery thrombosis occured in 1 patient (0.4%), renal vein thrombosis in 1 patient (0.4%), haemorrhage occured in 15 patients (perinephric haematoma in 12, renal artery rupture in 2, renal vein rupture in 1). In 3 (1,3%) patients (1 with renal vein thrombosis and 2 with renal artery rupture) we noted lethal outcome. Renal artery thrombosis, renal vein thrombosis and renal artery rupture represent the most severe technical complications following renal transplantation, associated with graft loss and lethality. Related to donor type, better results are obtained using living donors.

Transitional cell carcinoma 15 months after renal transplantation

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PP

Kidney transplant recipients on maintenance immunosuppressive therapy are at increased risk of developing de novo malignancies. Despite the pretransplant evaluation, a possible transmission of the cancerogeneity in living related donor transplantation could not be excluded. We observed a case of widespread TCC, developing 15 months after transplantation in renal allograft with sustained graft function.

A 25-year-old female patient with no previous history of renal disease presented at our department in 1991 with hypertension, edema and incipient renal insufficiency. Tru-cut kidney biopsy revealed changes towards focal segmental glomerulosclerosis. After 6 years follow-up, renal replacement therapy was commenced. Since our kidney transplant program is exclusively based on living donation, the 57-year-old father started a pretransplant work up during which small TCC of the bladder was found. After a transurethral resection of the bladder tumor and its BCG treatment, a period of 6 years follow-up was ensued. Considering father donation as a unique opportunity for the recipient, having no signs of any recidive of the tumor and after an approval from the ethical committee and obtained informed consent from both sides, the transplantation was performed in July 2003. After induction with methylprednisolon and Daclizumab, the patient was on standard triple maintenance immunosuppressive regimen (Cyclosporine A, Mofetil Mycofenolate and Prednisolone). There was a rapid decline in serum creatinine <100 μm/l in the early postoperative course on day 9.

At the end of the first year follow-up serum creatinine was 134 μm/l and patient complained on a pain in the right lower abdomen. Ultrasound (US) showed normal graft morphology and a cyst on the right ovarium. Further gynecological exploration indicated resection of a small uteral polyp. The pain was negligible, but after 2 months there was substantial rise in serum creatinine 191 μm/l and US findings for a graft edema. A three-day antirejection pulse corticoid therapy was administered and creatinine declined from 232 to 170 μm/l. US control showed decreased graft edema with central inhomogeneous part. Because of the intensive abdominal pain and edematous right leg CT was performed, finding packages of lymph nodes and a central defect of the graft perfusion. Graft and a lymph node biopsy were performed and histology for TCC found. The patient received four cycles of gemcitabine and carboplatine while maintained on corticosteroid 0.5 mg/kg/bw. The graft function remained stable and there were no metastasis on CT after the chemotherapy. The next month a gradual rise in serum creatinine was observed and a low dose of CyA and MMF was instituted. After 10 days she was hospitalized because of oligoanuria. A graft biopsy was performed to differentiate between a possible rejection and recurrence of the tumor. Histology showed changes for mild acute cellular rejection and dysplasia of the tubular cells. Second biopsy from the spot of the previous graft metastasis was required which showed infiltrates of TCC. Within the next few days graft function deteriorated rapidly and the patient started hemodialysis. CT didn't reveal any metastatic changes and she was scheduled for a

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graftectomy. In the operating theatre a carcinomatosis on peritoneum and omentum was observed and an inoperable state of the illness was assumed.

Posttransplant lymphoma: incidence and clinical manifestations

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OP

Posttransplant lymphoma (PTL), which is seen more than 50-100 times frequent in renal transplant patients, is a fatal complication of long-term immunosuppression (IS). Eight cases of PTL (mean age: 37+/-7, all male) were diagnosed in 747 patients who are being followed-up in two centers. Prednisolon (Pr), azathioprine (Aza) and cyclosporine (Cs) were used in 7 patients. Remaining patient who received second RT has taken Pr, mycofenolate mofetil (MMF) and tacrolimus (Tac). ATG has been used 2 patients. In 2 patients IS medication had been converted from Aza to MMF and from Cs to Tac. PTL occurred at a mean 47+/-38 month. Involvement areas were spinal cord (2 pts), liver (2 pts), bladder (1 pt), gastrointestinal tract (2 pts), skin and/or central nervous system (CNS, 4 pts). Histological type was diffuse large cell non Hodgkin lymphoma in all pts (all but one were B-cell origin). IS was reduced in all pts. Radiotherapy was applied when the presence of local disease. Five pts were deceased (three of them during chemotherapy, one pt just after the diagnosis, one pt with CNS relapse 7 month after the initial remission). Remaining three are still under follow-up with a functioning graft after 25+/-5 month of diagnosis. Incidence of PTL, which has still high mortality rate and different manifestations, is 1.1% in our pt population. It should be taken into consideration using newer IS medication in 3 of 8 pts before the development of PTL.

Serum cystatin C in patients with acute rejection episode

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PP

Despite recent studies showing that serum Cystatin C (CysC) is a better marker for GFR than the ubiquitously used creatinine, its clinical utility remains under evaluation. This marker is very sensitive for allograft function after renal transplantation. The concentration of CysC was compared with those of creatinine and beta 2 microglobulin (b-2M). As a clinical indication to evaluate the impaired renal function, we followed 64 transplanted patients. The concentration of CysC and b-2 microglobulin was measured with DAKO test, and the creatinine concentration with the Jaffe reaction. Plasma CysC significantly correlated ($r=0.592$, $p<0.001$) with creatinine in healthy controls and also with b-2M ($r=0.675$, $p<0.001$). In these patients the mean plasma creatinine, Cystatin C and b-2M concentration were: 81+/-13 mmol/L, 0.90+/-0.22 mg/L, 1,7+/-0.8, respectively. Plasma Cystatin C and creatinine significantly correlated over the postransplantation period ($r=0.686$, $p<0.001$), but we confirmed differences between kinetics of these parameters. In the first four days after transplantation the CysC concentration normalized rapidly when compared to that of creatinine. Development of acute rejection episodes (between 5 and 7 days after transplantation) showed high sensitivity and specificity of the changes of CysC compared to those of creatinine.

Postoperative lymphoceles following renal transplantation

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PP

Lymphoceles represent the most frequent fluid collection following renal transplantation. Their occurences are 5-15%. Most lymphoceles are asymptomatic, and do not require therapy. However, because of their potential to exert mass effect, lymphoceles are frequently associated with ureteral obstruction. The aim of the presenting study is to determine the incidence of lymphoceles after renal transplantation in comparison by donor type, postoperative complications and therapy regiment. >From 1995 to 2001, a total of 224 patients (mean age 36,7+/-10,7 years) underwent renal transplantation by following cohorts: 171 patient from living related donor (LRD group) and 52 patients from cadaveric donor (CD group). Lymphoceles appeared in a total of 20 (8,9%) recipients - 17 from LRD and 3 from CD ($p > 0,05$). In LRD group 13 patients had symptomatic, while the rest of 4 had asymptomatic lymphocele ($p < 0,05$). In CD group there was no symptomatic lymphoceles. In all of 13 patients with symptomatic lymphoceles following therapeutical procedures have been applied: percutaneous drainage in 7 patients and percutaneous drainage with povidon iodine instillation in 6 patients. In 11 patients we noted lymphocele resolution after therapy. In 2 patients (15,4%), we noted recidivism. After repeated procedure in those 2 patients, the outcome was also successful. We didn't perform operative procedures. Big, symptomatic lymphoceles can threaten graft in postoperative course. The best diagnostic method is echosonography. By our experience, percutaneous therapy

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associated with povidon iodine instillation is satisfying method, with low recurrence rates.

Vascular grafts interposition in renal allograft implantation

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PP

In minority of renal transplants it is inevitable to perform reconstructive vascular procedures during the renal allograft implantation. Those procedures have been considered a relative contraindication due to increased incidence of vascular complications. In this study, we prospectively evaluated vascular grafts interposition procedures in renal allograft implantation and their impact on renal transplant's outcome. >From 1995 to 2001a total of 224 patients (mean age 36,7+/-10,7 years) underwent renal transplantation at our Institute. Vascular grafts interposition was representative for some of the following cohorts: arterial autograft, vein autograft and prosthetic ePTFE vascular graft. Vascular grafts interposition procedures have been performed on 11 patients (4,9%). Of them, 7 patients underwent renal artery reconstruction by internal iliac arterial autograft interposition, due to short renal artery (3 patients) and impossibility to perform in situ arterial anastomosis. Renal artery reconstruction by basilic vein autograft interposition is performed on 2 patients due to multiple renal arteries (1) and short renal artery (1). Prosthetic ePTFE (expanded polytetrafluoroethylene) graft interposition we performed on 2 patients because of short renal allograft artery. In all 11 patients who underwent vascular grafts interposition postoperative course was normal, without vascular complications. Vascular grafts interposition could be used successfully in renal transplantation for selected cases.

ABO incompatibility in living related kidney transplantation: single center experience

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PP

ABO blood type incompatibility between a donor and recipient was generally considered a contraindication to kidney transplantation because of the associated high risk for hyperacute rejection. However, much effort has been made over the last decade to investigate whether successful and effective kidney transplantation is possible across the ABO blood group barrier.

We report a case of a 17-year-old female patient with a history of vesicouretheral reflux who received a living-related renal graft from an ABO incompatibility donor (mother). The patient was in chronic renal failure for 6 years, 4 years on maintenance hemodialysis and 2 years on peritoneal dialisys. Splenectomy was performed two months before transplantation. Furthermore, the pre-transplant management included 3 plasmapheresis treatment and administration of monoclonal anti CD20 antibody (Mabtera). Induction therapy consisted of methylprednisolone (500 mg) and Daclizumab (1 mg/kg BW at implantation and thereafter every 2 weeks x five doses). The maintenance immunosuppressive regimen included prednisolone (1 mg/kg/day tapered to 0.1 mg/kg/day after 4 weeks), cyclosporine (Neoral; 6 to 8 mg/kg/day) to reach target C2 levels and mycophenolate mofetil (Cellcept 1 g bid.). Early post-operative recovery resulted in immediate graft function and serum creatinine of 97 μmol/l on post-operative day 5. Additional 2 plasmapheresis treatments were performed in prevention of increased titer of agglutinins and possible immunological vascular rejection. Protocol graft biopsy was performed at first month after transplantation, in the same time when a rise in serum creatinine was observed. The light microscopic changes were assessed semiquantitatively according to a grading system based on the Banff schema. Histological changes showed ischemic glomerulopathy with moderate to severe tubulitis pointing to a severe acute humoral and cellular rejection with mild vascular infiltration. The patient underwent treatment with methylprednisolone pulse therapy, which resulted with recovery of the graft function and decrease of serum creatinine from 154 to 95 μmol/l. Thereafter, the routine hematology biochemistry revealed thrombocytosis, possibly as a side effect of corticosteroid therapy, which was successfully treated with s.c. heparin and finally, gradually decreased to the referent values. Within the next few months the titer of agglutinins maintained at low levels 1:8 and a stable graft function ensued.

In the present study, ABO-incompatible kidney transplantation has been shown to be a valid alternative. Protocols available for successful performing of ABO-incompatible kidney transplantation together with the induction and standard triple maintenance therapy allow relatively good immunological control for acute rejection in the first postoperative months. However, long-term results are still to be evaluated.

Everolimus substitution for cyclosporine a in patients with chronic allograft nephropathy

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PP

The long term benefits of CsA based regimens are limited by nephrotoxicity. This has led to trials of CsA dose reduction or elimination. We decided to substitute everolimus for CsA in kidney transplant recipients with chronic allograft nephropathy (CAN). Methods: In twelve renal transplant recipients (11 men and 1 woman), with a mean age 29 years (range 7 - 53), taking triple drug immunosuppression (methyprednisole, MMF and CsA), with CAN and deteriorating renal function low dose everolimus (1.5-2.0 mg/d) substituted for CsA. Blood pressure systolic and diastolic (BPS, BPD), serum creatinine (Scr), 24 hour proteinuria, total cholesterol, HDL-cholesterol and triglyceride levels were recorded 6 months before conversion (bfrc), at time of conversion (cnsn) and 6 months after coversion (aftrc). Results: One graft was lost. In the rest of the patients SBP/DBP levels were 133.18+1.24 / 86.36+8.39 mmHg, 135.45+6.10 / 88.80+9.81 mmHg, 132.27+10.80 / 85.90+8.60 mmHg bfrc, at cnsn and aftrc respectively (p: NS). Scr / 24 hour proteinuria levels were 2.16+0.43 mg/dl / 0.95+0.54 g/24h, 2.29+0.47 mg/dl / 1.29+0.81 g/24h, 2.60+0.67 mg/dl bfrc / 1.56+1.10 g/24h at cnsn and aftrc respectively (p: NS in all cases). Total cholesterol / HDL-cholesterol / triglyceride levels were 239.09+34.84 mg/dl / 48.00+11.74 mg/dl / 153.81+52.16 mgdl, 249.54+59.41 mg/dl / 51.54+8.07 mg/dl / 172.81+75.49 mg/dl, 264.09+40.78 mg/dl / 54.18+8.21 mg/dl /186.27+86.63 mg/dl bfrc, at cnsn and aftrc respectively (p: NS in all cases). Conclusion: The everolimus (low dose) substitution for CsA in the immunosuppressive regimen of renal transplant recipients with progressing CAN does not hold graft function deterioration, proteinuria and dyslipidemia worsening.

Urological complications of living vs cadaveric renal transplantation

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PP

The urological complications of renal transplantation are not uncommon and are often associated with graft loss and lethality. The aim of the presenting study is to evaluate urological complication rates by donor type and their impact on patient's and graft survival. From 1995 to 2001a total of 224 kidneys (171 from living related donor -LRD group and 52 from cadaveric donor -CD group) have been transplanted at Institute of urology and nephrology in Belgrade. Patients' mean age was 36,7+/-10,7 years. Urinary tract obstruction, urinary extravazation without urinary fistula formation, urinary extravazation with urinary fistula formation and lymphocele were analyzed. Statistical analysis is estimated by using of Fisher's test and Hi-squared test. A total of 54 (24, 1%) patient (55 from LRD and 6 from CD, p<0, 05) had some of urological complications. 21 patient (from LRD) had urinary tract obstruction, 8 patients (7 from LRD and 1 from CD) had urinary extravazation without urinary fistula formation, 5 patients (all from LRD) had urinary extravazation with urinary fistula formation and 20 patients (17 from LRD and 3 from CD) had lymphocele. In all cases, but one with recurrent urinary fistula, therapeutic procedure was successful. In that case there was lethal outcome due to complicated recurrent urinary fistula. Urological complications were more frequent in living donor transplantation. Urinary fistula formation represents the most severe complication.

Successful pregnancy after kidney transplantation

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PP

It is very well known that there are not many pregnant patients on dialysis, due to endocrine dysfunctions. After successful kidney transplantation, due normalization of endocrine dysfunction, sexual functions is established and the number of pregnancies increases. Aim of this work was to analyze 12 pregnancies after kidney transplantation in 11 patients between 1975 and 2004 in our hospital. Chronic kidney failure in 7 patients was caused by glomerulonephritis, in 3 pyelonephritis and in one lupus nephropathy. Average time on dialysis before transplantation was 28+20 months. Eight patients received kidney from living related donor (7 parents, 1 brother). Three patients received cadaveric kidney. Their mean age in the beginning of pregnancy was 27.7+4.7 years. Average time between the transplantation and conception was 46 months (from 7 to 202 months). Immunosuppressive regimen consisted of dual therapy (corticosteroid + azathioprine) in 8 patients, in two patients of triple therapy (corticosteroid + azathioprine + cyclosporine). The average gestation period was 36.5 weeks (29 to 40). Average birth weight of infants was 2545 grams (600 to 4080). Two infants died first day after birth. Their birth weighs were 600 and 1700 grams. Six full term pregnancies (>37 weeks) were achieved (50%). One patient had twins. Six were vaginal delivery, 5 caesarian section and one vacuum extraction. Before pregnancy, eight patients had creatinine values less than 110 mmol/l, two had 130 and 140 mmol/l

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and only one had 420 mmol/l. In the patient having creatinine 420 mmol/l before conception, reduced glomerular filtration during pregnancy were observed, i.e. creatinine vale was up to 600 occurred mmol/l. Proteinuria before conception were recorded in 4 patients, mean 0,23 g/l (0,1 to 0,6). It was not worsened during pregnancy and after delivery. Newly established preteinuria during pregnancy occurred in three patients, mean 0,3 g/l (0,2-0,4). In two of them persisting after delivery, mean 0,2 g/l. None of the patients had high blood pressure before pregnancy (>140/90 mmHg). But during pregnancies, hypertension occurred in six patients (50%). In all of them, blood pressure was normal after delivery. Successful pregnancy in women with kidney transplant was highly possible, and these results confirm it. During pregnancy and after delivery there was no worsening of transplanted kidney functions, except in one patient. There is a high risk of hypertension during pregnancy. In our opinion the stability of kidney transplant function before conception is the main condition for a successful pregnancy.

Sirolimus (Rapamune®) in renal transplanted patients - first observation in Bulgaria

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PP

Sirolimus (Rapamune) is a new immunosuppressive drug (TOR-inhibitor) which is comparable in efficiency with calcineurin inhibitors, but the nephrotoxicity is practically not important. The aim at the study was to investigate the effect of application of Sirolimmus instead of Cyclosporin stopped due to biopsy proven cyclosporin chronic nephrotoxicity. During mean 22,3 months 14 renal-transplanted patients were followed, according to above mentioned aim at the study. The dose of Sirolimmus was 4-6 mg/d, maintaining 8-14 ng/ml blood through level. Switching Sirolimus was occurred average 5.2 years after renal & cyclosporin transplantation. During the treatment course with Sirolimus renal function remains stabil and was stoppted preceding tendency for worsening of Ccr. Through the observation period 1 patient is dead, as a result of inflammied bronchiectasiae and another is started chroniochemodialysis due to overwhelming vascular-humoral rejection. We had not confermed significantly increase of serum cholesterol end fall of thrombocyte count, which could be explained with small number of patients. In conclusion, we confirm the ability fur of Sirolimus (Rapamune) to be effective immunosuppressive drug in renal transplantation.

Cyclosporine a microemulsion - possibilities of effect on steroid-resistant nephrotic syndrome

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PP

Cyclosporin A (CA) is emerging as a potentially promising agent in the therapy of primary nephritic syndrome, particularly in steroid-resistant patients and in patients who have severe side effects from prolonged or recurrent glucocorticoid therapy and who fail to satisfactorily respond to cyclophosphamide or for some other reason cannot be treated with alkylating agents. The goal of the study is to show the effect from therapy of steroid-resistant primary nephrotic syndrome with cyclosporine A microemulsion - Sandimmun Neoral. We studied 15 patients with biopsy proven primary nephritic syndrome, primary crescentic glomerulonephritis, lupus-nephropathy. We performed a course of therapy (9,8 + 4 months - from 3 to 37) with cyclosporine A microemulsion - Sandimmun Neoral 2,45 mg twice day under continuous monitoring of blood levels (102+5,3 μg/l). We achieved a total remission in 73,3% from all patients. The change of proteinuria was from 11,2 g/24 h. to 1,2 g/24 h. ($p<0,0001$) and the change of serum albumin is from 18,4 g/l to 34,2 g/l ($p<0,001$). Our results show that CA is a promising therapy of nephritic syndrome when other agents are not enough efficient or are contraindicated.

Urothelial (transitional) cell carcinoma in kidney allograft

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PP

The aim of this case presentation was to show the importance of protocol biopsy not only in the findings of subclinical rejections but also as a diagnosis of rare cases with graft malignancies. We report on a Transitional Cell Carcinoma (TCC) in a 39-year-old female kidney allograft from living donor (father) with previous history of bladder TCC, treated with trans-urethral resection of the tumor and 6 years follow-up before transplantation.

Forty days after transplantation was performed, a segment of urether was resected because of uretheral fistula

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(leakage). Histological analyses showed partially atrophic urotel with discontinuity of a basal membrane and a diffuse inflammation infiltrate with areas of hemorrhage. In the meantime there was no consent of the patient for a protocol allograft biopsy. After 15 months, graft biopsy was performed to confirm a highly suspicious acute rejection. Microscopic analysis showed a presence of metaplasia to displasia of majority of the tubular epithelium and few areas with neoplastic infiltrate of TCC. At the same time histopathological finding of the biopsy from the augmented para-aortal lymph node showed also a metastatic infiltrate of the same carcinoma found in the graft. After 4 courses of chemotherapy, a biopsy from two different spots of the same kidney (upper pole and central part where previous MS was found) showed changes of mild acute cellular rejection with presence of a mild chronic allograft nephropathy, but also with infiltrates of TCC. Finally, the graft was not removed since carcinomatosis was observed during the surgical procedure. The histology confirmed presence of infiltrates of TCC on peritoneum and analyzed fragments of omentum. Unfortunately, we could not determine primary origin of the tumor in the graft since cytological and molecular examinations of tumor cells were requested, both from the donor and the graft. The teaching point from this case report might be the importance of protocol biopsy in the first few months after transplantation, since an early histological diagnosis and treatment could have a beneficial impact on the prognosis and outcome of the disease.

A case of ABO incompatible renal transplantation

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PP

First ABO incompatible renal transplantation from living donor was prepared in our Center for renal transplantation.

Recipient, U.T. with HLA typing: HLA-A9, Ax/B35, B53 and blood group B –

Donor, mother of U.T. with HLA typing: HLA-A3, Ax/B51, B53 and blood group AB +

Cross-match and HLA antibodies were negative.

Titar of alfa antibodies was determined, before transplantation value 1:32 and 1:8 (after therapy) and after trasplantation with value 1:8 and 1:4.

Current protocol was used:

1. Splenectomia
2. Plasmapheresis
3. RITUXIMAB 375 mg/m^2

Immunosuppresive therapy

One week after transplantation showed damaged tubular epithelium and masive lymphocyte infiltration. After the metilprednisolon pulse therapy kidney is functioning well within the next 6 months.

PP = Poster Presentation; OP = Oral Presentation

7-th Congress of the
Balkan Cities Association of Nephrology, Dialysis, Transplantation and Artificial Organs
8-11 September, 2005
OHRID

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7-th Congress of the Balkan Cities Association of Nephrology, Dialysis, Transplantation and Artificial Organs 8-11 September, 2005 OHRID

Dear Colleagues,

On behalf of the Organizing Committee of the 7th BANTAO Congress we have the pleasure to invite you to Ohrid, from 8th to 11th September, 2005. The idea of establishing the Balkan Cities Asociation for Nephrology, Dialysis, Transplantation and Artificial Organs (BANTAO) was born in Ohrid in 1993. It was decided that the first BANTAO Congress was to be held in 1995 in Varna. The successful Congresses in Varna (1995), Struga (1997), Belgrade (1998), Izmir (1999), Thessaloniki (2001) and Varna (2003) followed, and established BANTAO as the major forum of Balkan nephrologists, indicating our will to communicate, to collaborate, to get to know each other and to share our difficulties. More than a professional event, the BANTAO Congress became a cultural phenomenon, through which we discovered that we have many more things in common than we previously thought, and that we must take every advantage now of being able freely to communicate in a world without political boundaries. The BANTAO Council has managed, in a spirit of peace, friendship and collaboration, to continuously strengthen this association and, moreover, to make it known and reputable in Europe, as well as on an international level.

It has been decided that the BANTAO Congress would be held every two years in a different Balkan country and in a different city. In appreciation of the honour, made by the BANTAO Council to choose Ohrid as the hosting city of the 7th BANTAO Congress, the Organizing Committee and the Macedonian colleagues will make every effort towards a most successful and memorable event.
Lake Ohrid is known as a "museum of living fossils" because it preserves relict fauna dating millions of years. The city of Ohrid on Lake Ohrid is the main tourist resort of the Republic of Macedonia, situated 172 km from Skopje (two and a half hours easy drive). It represents a pearl of an old architecture, and treasures valuable cultural and historical monuments. The establishment of the city dates back to the second century AD, with its first recorded name Lychnidos. Its Slavic name Ahrida appeared six centuries later. In the ninth century Ohrid was a cradle of Slavic literacy: Clement and Nahum, disciples of the first Slav educators Cyril and Methodius, founded in Ohrid the first Slav school for higher learning. The centuries of tradition and culture have left Ohrid with many sites, such as the old fortress, the old part of the city, and numerous medieval churches with outstanding frescoes and icons.
Ohrid is the site of the first University on the Balkan peninsula. Along the crystal-clear waters of the lake and endless sandy beaches, modern hotels rise like a string of pearls. In the Old Bazaar district craftsmen still ply ancient trades. The narrow streets are enriched with world famous churches, beautifully painted world famous frescoes and icons. Ohrid hosts many international festivals, meetings and conferences and is host to the Balkan Festival of Original Folk Songs and Dances.
Ohrid and Lake Ohrid are protected under the United Nations Register of World Values as an outstanding environment.
Looking forward to welcoming you all in Ohrid, the city of UNESCO, for knowledge and friendship.

With best regards,

Dimitar Nenov
President of BANTAO

Momir Polenakovic
President of the 7th BANTAO Congress

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AUTHOR INDEX

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