

Original Article

Short-Term Complications in Kidney Transplantation - Single Center Experience

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Abstract

Introduction. Kidney transplantation in a small developing country faced with political and economical burden, such as Bosnia and Herzegovina, represents a great problem for dedicated medical staff. The aim of this paper was to show results of kidney transplantation with special focus on frequency and causes of poor outcomes in the first year after transplantation.

Methods. For this retrospective review we have used the medical database of the University Clinical Center Tuzla, Department for Nephrology, Dialysis and Transplantation, for the period from September of 1999 through July of 2013. During that period, 117 renal transplantations were done, out of which 99 (84,62%) from living related donor, five (4,27%) from living unrelated donor (spouse) and 14 cadaveric (11,11%) transplantations. We have analyzed patient and graft survival as well as development of medical and surgical complications. Poor outcome in the first post-transplantation year was defined as death and graft loss.

Results. Gender structure of 117 transplanted patients was 76 males (64,96%) and 41 females (35,04%) with an average age of 33,68 (\pm 10,47), including six children younger than 16. During the first post-transplantation year, five recipients died (4,27%), with cardiovascular incidents as a direct cause in three and sepsis in two cases. Nine patients (7,69%) had lost graft function during the first year post-transplantation. Causes of graft loss were acute humoral rejection in two and sepsis in two recipients, with venous and arterial thrombosis, rupture of renal artery and multiorgan insufficiency after hemorrhagic shock. Acute rejection was diagnosed in ten (8,55%) and new onset diabetes mellitus in five (4,27%) recipients.

Conclusions. We can conclude that survival of kidney graft and recipients after first post-transplantation year was 92,31% and 95,73%, respectively which is in accordance with modern recommendation, especially when we talk about small transplantation center in the developing country with political and financial problems.

Keywords: kidney, transplantation, short-term survival

Introduction

Kidney transplantation in Bosnia and Herzegovina (BH) dates back to the 70-ies of the last century in Sarajevo, and after the break during the war, it was started again during 1997 in Sarajevo and in 1999 in Tuzla. However, despite such an early start, transplantation in BH is still limited to mainly living related transplantation, while deceased donor transplantation is still waiting for better days. During the period from 2006 to 2011, there were seven deceased donors, so 14 kidney transplantations were done. Current situation can be explained by our geopolitical circumstances, divided health system within the state, lack of motivation among doctors and poor financial support. Kidney transplantation in a small developing country faced with political and economical burden, such as BH, represents a great problem for dedicated medical staff. The aim of this paper was to show the results of kidney transplantation in the University Clinical Center Tuzla, with special focus on frequency and causes of poor outcomes in the first post-transplantation year.

Materials and Methods

For this retrospective review we have used the medical database of the University Clinical Center Tuzla, Department for Nephrology, Dialysis and Transplantation, for the period from September of 1999 through July of 2013. During that period, 117 kidney transplantations were done, out of which 99 (84,62%) from living related donor, five (4,27%) from living unrelated donor (spouse) and 14 transplantations from deceased donors (11,11%). All transplanted patients were preoperatively prepared in the Department for Nephrology, Dialysis and Transplantation from where they were directly sent to the operating theatre. After they spent 4 to 7 postoperative days in the Intensive care

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unit (with daily nephrologists visits), they were sent back to the Department for Nephrology, Dialysis and Transplantation for additional 15-30 days. After that period, they have had continuous follow-up in the Nephrology outpatient clinic for transplanted patients. During the period from 1999 until 2002 we used ATG and triple immunosuppressive therapy consisting of corticosteroids, azathioprine and cyclosporine. Since 2002 we have switched to basiliximab and replaced azathioprine by mycophenolate mofetil, and from 2006 on, half of our patients use tacrolimus. More than 80% of transplanted patients have got urethral stent for 2 to 3 weeks. Poor outcome in the first post-transplantation year represent death and graft loss.

Results

Gender structure of 117 transplanted patients was 76 males

(64,96%) and 41 females (35,04%). The average age of kidney graft recipients was 33.68 ($\pm 10,47$), ranging from 12 to 60. There were six children younger than 16. Primary renal disease was glomerulonephritis in 54,7% of recipients (mainly without pathohistological confirmation); undefined in 17,1%, reflux in 10,25%, interstitial nephritis or pyelonephritis in 7,69%, lupus nephritis in 2,56% and diabetes in 2,56% of recipients. Living related donor was mother in 31,31%, father in 31,31%, sister in 12,12%, and brother in 13,13% of cases. In 10,10% of cases donors were distant relatives. In all five cases of living unrelated donations, donors were spouses. Out of seven deceased donors, three had head trauma as a cause of brain death, and four had acute neurologic incident. The overall average living donor age was 49,66 \pm 11,19 (25-72), while the average deceased donor age was 48,71 \pm 16,99 (25-62).

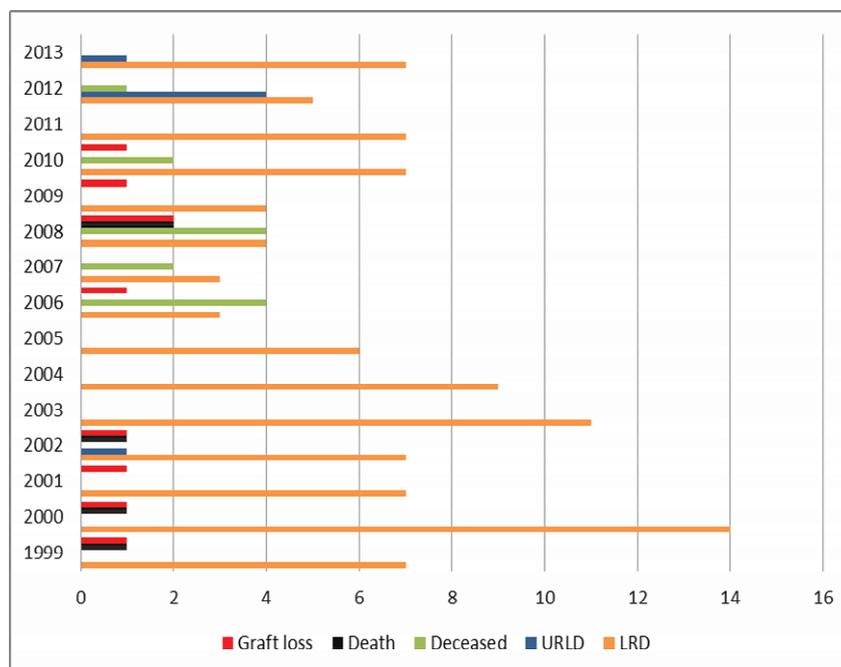


Fig. 1. Frequency of death and graft losses during the first post-transplantation year
Legend: Deceased - transplantation from deceased donor, UURLD-unrelated living donor transplantation, LRD - living related donor transplantation

During the first post-transplantation year, five recipients died (Figure 1), out of whom four with non-functional graft and one with functional graft. Causes were cardiovascular incidents in three and sepsis in two cases. Three of those five got a kidney from living related donor and two from deceased donors. Overall nine patients lost graft function during the first year post-transplantation (Figure 1), out of whom three with kidney from deceased donors. Causes of graft loss were acute humoral rejection in two and sepsis in two recipients, with venous and arterial thrombosis, rupture of renal artery and multiorgan insufficiency after hemorrhagic shock being the cause of the remaining graft losses. The average age of patients who died or lost the graft was 40(26-60), and the average number of months spent on dialysis for those was 71(8-264).

Among other complications emerging during the first year after transplantation the most frequent ones were: acute rejection in ten, diabetes mellitus in five, lymphocella in four, urinome in three, urinary tract infection in three and intramuscular hematoma in two patients. Besides that, one patient had stent obstruction with consequential hydro-nephrosis, the other one profound hypokaliemia and the third one reactive stress disorder. One child had posterior reversible encephalopathy syndrome (PRES), and one patient with delayed graft function had pathohistologically confirmed acute tubular necrosis.

Discussion

According to the data from BH Renal register, in year 2011, 2362 patients were treated by one of renal replacement

therapies; therefore prevalence was 665,2 per million population. Unfortunately, only 7% were those subjected to transplantation and with functioning renal graft. The Society for nephrology, dialysis and kidney transplantation in BH, with the help of international nephrology and transplantation societies, puts great effort in realization of the kidney transplantation project. However, support from official health institutions in BH is not sufficient at the moment, so the transplantation medicine in BH is dependent on isolated efforts of medical personnel in three university clinical centers. Despite the fact that the legislative regulation for transplantation exists and that it is in concordance with the European regulations, lack of, mainly political, will to commence with necessary activities on implementing those regulations has resulted in scarce number of realized transplantations in previous 15 years.

However, under such circumstances, 117 kidney transplantations done solely in Tuzla represent result worthy of respect, with great chance of growing number of transplanted patients in the near future. Small transplantation centers in developing countries encounter numerous obstacles such as providing political and public support, financial support, education programs and technological environment, and BH is not an exception. Starting the program of kidney transplantation in Tuzla, in 1999, only four years after the devastating war (1992-1995), was not at all an easy task.

Analysis of the results of transplantation in Tuzla in the past 15 years shows that patient and graft survival is in accordance with the widely accepted recommendations and guidelines [1]. 85% is assumed to be an acceptable minimum of graft survival in the first post-transplantation year, and 90% for patient survival [2].

The results obtained from seven years of living donor kidney transplantation in Great Britain showed that graft survival during that first post-transplantation year was 95%, while patient survival was 99% [1]. In our series of 104 (related and un-related) living donor kidney transplantations, three patients died in the first year following the procedure, which means that patient survival was 97%. In the same time period, four patients lost graft function, which means that graft survival was 96%.

Introducing basiliximab in immunosuppressive protocols in year 2002 significantly influenced transplantation results by lowering a number of acute rejection episodes in the first year after transplantation, as shown in large patient series [3]. In the available literature there are scarce reports on transplantation results in non-experienced transplantation centers, but in the report from Great Britain graft survival was 93% after the first post-transplantation year, while incidence of early acute rejection was 11% [4]. The result from our center show lower incidence of acute rejection episodes (8,55%), most probably due to the fact that living related donor transplantations prevailed. New onset diabetes mellitus is one of the important complications of transplantation. It is estimated that incidence of developing diabetes mellitus after transplantation is 4-20% [5]. Five of our patients developed this complication (4,27%), with four of them taking tacrolimus as calcineurin inhibitor. Three of those five patients had graft from deceased donors. Graft infection, frequently compli-

cated with sepsis, is also a significant complication and one of the leading causes of graft failure and loss, and death as well [6]. We had two patients, both with graft from deceased donors, who died as a result of sepsis developed on the basis of graft infection with primary delayed graft function.

The frequency of postoperative complications such as lymphocellae, urinomes and urinary tract infections in our patients was 8,6%. Surgical interventions were necessary in those with urinomes, while lymphocellae were spontaneously resolved. Urinary complications may produce great problems in early postoperative period and jeopardize graft function and patient's health; therefore, a good surgical explantation technique is of great importance, especially in deceased donor transplantation [7], as well as transplantation surgeon skills, since it has been proved that urinary complications are significantly more frequent in non-experienced surgeons [8].

5,27% of vascular complications in our patients do not represent high frequency, but it was significant since these complications resulted in death in four patients, and one emergency graftectomy in one patient with arterial thrombosis. Vascular complications in the earliest postoperative time, together with sepsis, are leading cause of graft loss in transplanted patients [9]. Thromboses in renal graft in adults are responsible for 2-7% of early graft loss, while in children those are much more frequent, reaching up to 35% [10]. Our six transplanted children, all getting graft from living related donor, fortunately did not have such complications. Cardiovascular complications with consequential death are very frequent in transplanted patients, and their frequency is in correlation with the number of pre-transplantation dialysis months [11]. This was also valid for our rather little series of transplanted patients.

Only one girl out of our six transplanted children had early neurological complication (PRES) that resolved without further consequences. In a paper dealing with these complications, it is stated that frequency of neurological complications in children was 9%, PRES being the most frequent one [12]. Our results, together with those from the literature, show that incidence of early complications in kidney transplantation is reduced, according to the opinion of the majority of researchers due to the usage of modern immunosuppressive drugs [13]. In one Irish study, frequency of early complications was lowered from around 7% in the nineties to a less than 1% at present time [14].

Conclusions

We can conclude that survival of kidney graft and recipients after first post-transplantation year was 92,31% and 95,73%, respectively and is in accordance with modern recommendations, especially when we talk about small transplantation center in the developing country with political and financial problems.

Conflict of interest statement. None declared.

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