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Short communication

Transplant Activity May Influence Number and Characteristics of Dialysis Patients – Slovenian Data

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Abstract

Maintenance hemodialysis (HD) and kidney transplantation were introduced in Slovenia in 1970. For decades the number of renal replacement therapy (RRT) patients has been increasing. In 2011, for the first time after 40 years, a slight decrease was observed (from 2020 RRT patients in 2010 to 2011 RRT patients in 2011; 980 p.m.p.). The number and percentage of patients with functioning kidney graft was continuously increasing, reaching 31,4% of all RRT patients at the end of 2012. The number of incident RRT patients in 2011 was stable and relatively low; 115 p.m.p., median age 68 years, 29% diabetics. Median age of prevalent RRT patients was 60 years, for HD patients 67 years, for peritoneal dialysis patients 56,5 years and for transplanted patients51 years. Hemodiafiltration was prescribed in 59,3% of HD patients. The number of dialysis patients is decreasing, however their age and comorbidity are increasing, including more demanding conditions for arteriovenous fistula construction than in the past. With stable transplant activity, senior program in Eurotransplant, possible increase in preemptive transplantation and improved chronic kidney disease care we may expect further decrease in number of dialysis patients and increase in complexity of their care in the next years, including care for patients after kidney graft failure.

Key words: hemodialysis, kidney transplantation, registry, renal replacement therapy

Introduction

Dialysis has been the cornerstone of renal replacement therapy (RRT) for end-stage renal disease for decades, with a growing number of patients in many countries and regions since the introduction of maintenace dialysis in the early sixties of the 20th century. In 2012 annual growth rate in the number of dialysis patients was estimated to be ≈ 2% for Europe and Japan, 3-4% for USA, ≈ 12% for other regions and 7-8% for the whole world [1]. However, the trend of continuous increase in the number of dialysis patients is reversed in some countries, in parallel with high and stable transplant activity. In Slovenia, 40 years after introducing maintenance hemodialysis in 1970, the decrease in the number of dialysis patients has been observed since 2010 [2]. This trend, which is expected to continue in the next years, may be a consequence of various factors: relatively low number of incident dialysis patients as compared to other European countries [3], increasing age and comorbidity, increased access to transplantation, increased awareness of chronic kidney disease (CKD) detection and treatment, introduction of preemptive kidney transplantation etc. A trend of slightly increasing mortality of dialysis patients in the last years without detectable decrease in dialysis quality or prescription may be a consequence of greater comorbidity of dialysis patients [2]. Patients with failed kidney graft represent a special, complex group of dialysis patients. The number of such patients may increase in the future (in parallel with the increasing number of transplant patients), with high comorbidity burden and high mortality, especially in the first year after graft failure [4].

Slovenian data

In 1970 maintenance hemodialysis was introduced in Slovenia. In the same year the first kidney transplantation was performed at the University Medical Center Ljubljana. Slovenian RRT Registry, collecting data on individual RRT patients, was founded in 2004. The number of RRT patients has increased until 2010. In 2011 for the first time after 40 years the number of RRT patients has sligthtly decreased compared to 2010 (Figure 1, Figure 2). In parallel with that, structure of RRT patients is continuously changing-number and proportion of the patients with functioning kidney graft is increasing and number of dialysis patients is decreasing. At the end of 2012, it was estimated that 31,4% of all RRT patients had functioning kidney graft (643 patients) (Figure 3). The number of incident RRT patients was relatively low compared to many European countries, with 115 per million of popullation at the end of 2011; median age 68 years, 29% being diabetics.

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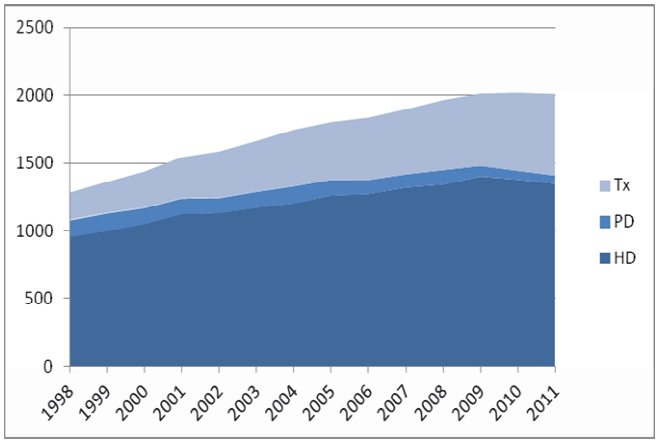

Fig. 1. Number of prevalent RRT patients in Slovenia from 1998-2011 (RRT: renal replacement therapy; Tx: transplantation; PD: peritoneal dialysis; HD: hemodialysis)

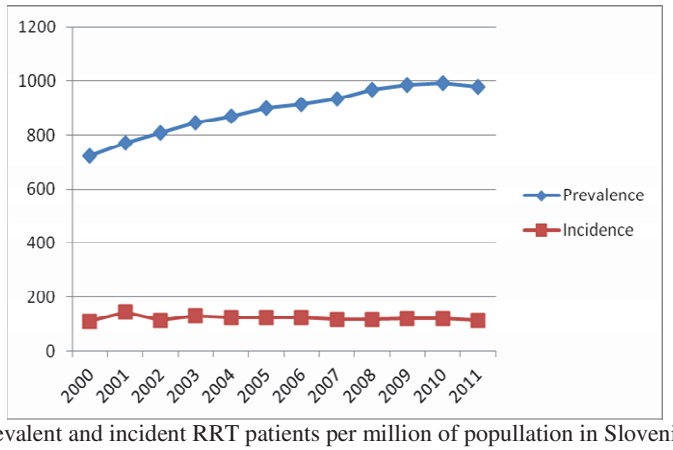

Fig. 2. Prevalent and incident RRT patients per million of popullation in Slovenia from 2000-2011 (incident patients at day 1 included; RRT: renal replacement therapy)

Fig. 3. Percentage of patients treated by different forms of RRT among all RRT patients in Slovenia from 1998-2011 (RRT: renal replacement therapy; Tx: transplantation; PD: peritoneal dialysis; HD: hemodialysis)

Prevalent HD patients are significantly older than patients treated by PD or transplantation. In 2011 median age of hemodialysis patients was 67 years, compared to 51 years for transplant patients and 56,5 years for patients on peritoneal dialysis (60 years for all RRT patients) (Figure 4). Percentage of HD patients with arteriovenous fistula decreased from 85% in 2005 to 79% in 2011, despite the active policy of timely preoperative ultrasonography mapping and vascular access surgery performed by nephrologists in many cases. Increase in the number and percentage of patients with HD catheters may be at least in part a consequence of transplant activity (many patients with arteriovenous fistula are transplanted) [5], and patients remaining on hemodialysis are older and with more comorbid conditions. Trying to balance this factor potentially

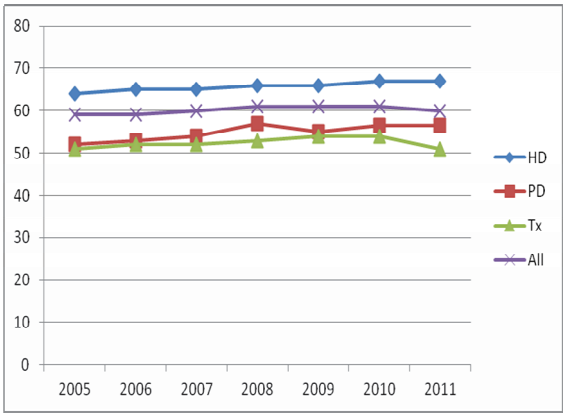

Fig. 4. Median age of prevalent RRT patients in Slovenia by RRT modality from 2005-2011 (RRT: renal replacement therapy; HD: hemodialysis; PD: peritoneal dialysis; Tx: transplanted patients; All: all RRT patients)

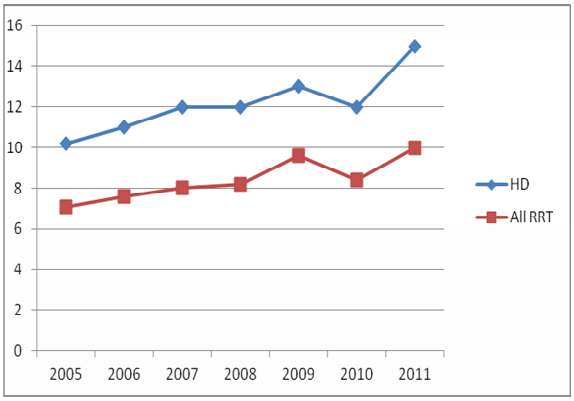

Fig. 5. Percentage of patients with hemodialysis catheters among HD and among RRT patients in Slovenia (RRT: renal replacement therapy; HD: hemodialysis)

influencing vascular access structure in HD patients, we have calculated the percentage of patients with HD catheters not only from all HD patients but also from all RRT patients (including transplant patients) (Figure 5). RRT patients having hemodialysis catheters represented 10% from all RRT patients and 15% from all HD patients in 2011. Hemodiafiltration is increasingly being used in Slovenia, with 59.3% of HD patients treated by hemodiafiltration in 2011 (Figure 6). Mortality of hemodialysis patients is slowly increasing, accompanied by increasing mortality of all RRT patients (Figure 7). As a total RRT population is relatively small and few cases may influence percentages for particular year, we have to wait for some years to see if these trends are constant and convincing.

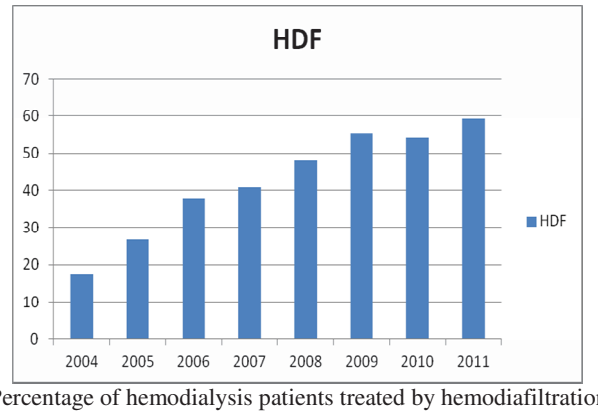

Fig 6. Percentage of hemodialysis patients treated by hemodiafiltration in Slovenia from 2004-2011

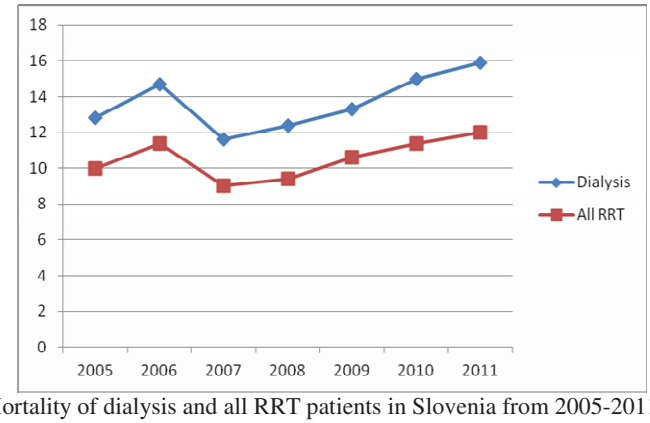

Fig. 7. Mortality of dialysis and all RRT patients in Slovenia from 2005-2011, with incident patients at day 1 included (RRT: renal replacement therapy)

Conclusions

In Slovenia, the number of prevalent RRT patients has started to stagnate or slightly decrease since 2010. Among all RRT patients, the number and percentage of patients with functioning graft are continuously increasing. Expectedly, the number of dialysis patients is decreasing, but they are increasing in age, comorbidity and have more demanding conditions for arteriovenous fistula construction than in the past. Characteristics of dialysis patients are expected to be further complicated by patients after kidney graft failure that require complex medical care and may be more numerous in the future. With stable transplant activity, senior program in Eurotransplant, possible increase in preemptive transplantation and good CKD care we may expect further decrease in number of dialysis patients and increase in complexity of their care in the next years, including care for patients after kidney graft failure.

Conflict of interest statement. None declared.

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