Five years of living donor kidney transplantation at University clinical center Tuzla, Bosnia and Herzegovina, from 1999 through 2004

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Objective To analyze patient and graft survival rate over the first five years of kidney transplantation at University Clinical Center Tuzla, Bosnia and Herzegovina, in the period from 1999 through 2004. **Methods** Transplantations were done after the candidates were evaluated following European Best Practices Guidelines. After open donor nephrectomies Collins solution was used for kidney perfusion. Donor blood vessels were anastomosed end-to-side to recipient external iliac vessels, whereas donor ureter was anastomosed to the recipient bladder with an antireflux technique. Basic immunosupressive protocol was applied in all pateints, with introduction of Basiliximab (Simulect) on the first and fourth postoperative day as the transplantation in our Center progressed. Descriptive statistical analyses along with Kaplan-Meier survival analysis were performed. **Results** The first living donor kidney transplantation started at University Clinical Center Tuzla, Bosnia and Herzegovina on September, 15 1999. There were 52 transplantations performed through 2004. One, two and five-year graft survivals were 96%, 96% and 75%, respectively. One, two and five-year patient survivals were 94%, 94% and 84%, respectively. One, two and five-year survivals of patients with functioning grafts were 92%, 92% and 67%, respectively. **Conclusion** Kidney transplantation survival rates at University Clinical Center Tuzla, Bosnia and Herzegovina from 1999-2004 did not differ from the rates achieved in developed countries worldwide.

Key words: Kidney transplantation, Donor, Rrecipient, Survival rates.

Introduction

There were 1,863 patients on chronic dialysis program and 57 kidney transplants with functioning graft in Bosnia and Herzegovina in 2004 (1). Before the war in Bosnia and Herzegovina 1992-95 kidney transplants were performed at the Transplant institute in Sarajevo. However, its facilities were devastated during the war, but transplantation

has been renewed due to the growing need for that type of renal replacement treatment. The pioneer steps were made after the war in Bosnia and Herzegovina at University Clinical Center Tuzla, where kidney transplants include living related, living unrelated and deceased donor transplants. Living unrelated donor transplantation has not been legally regulated in Bosnia and Herzegovina, despite some sporadic cases and the obvious need for that kind of treatment. The aim of this study was to analyze patient and graft survival rate over the first 5 years of kidney transplantation at University Medical Center Tuzla, Bosnia and Herzegovina, in the period from 1999 through 2004.

Methods

European Best Practice Guidelines for Renal Transplantation and European Society for Organ Transplantation guidelines were followed when preparing the candidates for transplantation (2). Candidates were admitted after having been acquainted with them relevant information on transplantation and collected certain out-patients' medical test resuls. Donor was evaluated first, followed by a recipient. In an operating theatre open donor nephrectomy was done using a flank incision. Collins solution was used for kidney perfusion. Graft biopsy was done and the graft was implanted in contralateral iliac fossa. Donor blood vessels were anastomosed end-to-side to recipient external iliac vessels, whereas donor ureter was anastomosed to recipient blader with an antireflux technique.

Basic immunosupressive protocol (Cyclosporine A, Azathioprin and Prednisolon) was applied in first 28 patients. All other received Cyclosporine A, Mycophenolate mofetil and Prednisolon. Starting with 30st, patient received Basiliximab on the first and fourth post-operative day as the transplantation in our Center progressed. There were no acute rejections in the early postoperative period.

Descriptive statistical analyses were performed. Kaplan-Meier curve was used to perform survival analysis.

Results

First living related donor kidney transplantation at University Clinical Center Tuzla was performed on September, 15. 1999. Totally, 52 transplantations were performed up to 2004 and all were living-related.

Donor characteristics are presented in Table 1.

Three donors had borderline DTPA clearance rates of about 40 ml/min. Nephrectomy was mostly done on the left side, five on the right side, only. There were two renal arteries in five patients. In one case both renal arteries were sewn to the external iliac artery. There were 17 donors older than 60, thereby influencing our results, even though donors met all eligibility criteria (Figure 1).

Recipient characteristics are shown in Table 2.

Recipient age distribution is shown in Figure 2.

There were 8 biopsies of native kidneys performed prior to transplantation. Glomerulonephritis was diagnosed in 28, pyelonephritis in 3, interstitial nephritis in 5, diabetes mellitus in 3, systemic lupus erythematodes in 1, non-differentiated primary kidney disease in 8 and vesicoureteric reflux in 4 cases.

Two recipients underwent nephrectomy on the side of vesicoureteric reflux, whereas one was due to infected reflux. Bladder neck sclerosis was found in one patient and one underwent bladder augmentaton procedure.

Complication in 52 recipients are shown in Table 3.

Table 1 Donor characteristics

Relationship	N	Age (years) X ± SD	*DTPA Clearance rate (ml/min; X± SD)		N of renal arteries >1
			Right kidney	Left kidney	
Mother	24	55,0±11,3	54,8±10,4	53,6±10,5	3
Father	15	61,4±6,9	49,0±6,4	47,8±6,6	1
Sister	5	44,5±6,4	67,0±2,9	65,5±6,4	1
Brother	6	46,0±2,9	54,5±10,6	57,5±12,0	-
Others**	2	38,5±5,5	54,0±4,0	56,5±6,5	-
Total	52	51,1±6,58	55,9±10,1	56,2±8,4	5

*DTPA – diethylen etriamine pentaacetic acid; ** – uncles, aunts and nephews

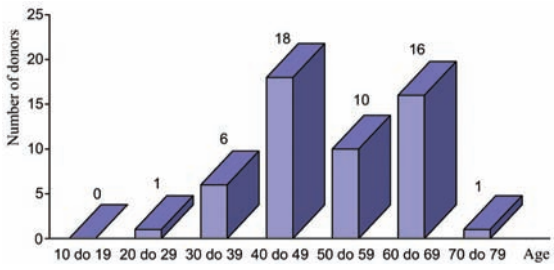

Figure 1 Histogram of donor age distribution

Table 2 Recipient characteristics

Age (years; X ± SD	32,4±8,1
Sex (males/females)	36/16
Time on dialysis (months; X ± SD)	21,5±6,7
Residual kidney function – diuresis	N
0 ml	7
0-100 ml	11
101-500 ml	11
> 500 ml	23
Voiding cystourethrogram	N
Vesicoureteric reflux	4
Small bladder capacity	21
Normal bladder capacity	27

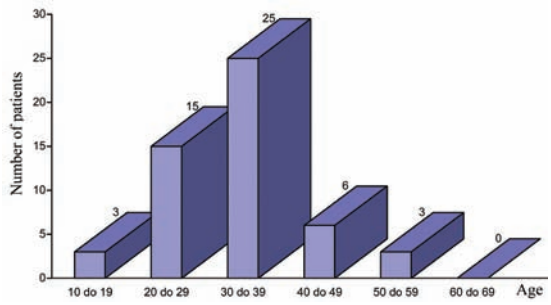

Figure 2 Histogram of recipient age distribution

Table 3 Recipient complications

Complications	Patients N (%)
Acute rejection	10 (19.2)
Venous graft thrombosis	1 (1.9)
Urinom	1(1.9)
Lymphocoella	2 (3.8)
Perirenal hematom	2 (3.8)
Total	16 (30.6)

One graft nephrectomy was done due to venous thrombosis.

Two patients died, one of aneurysm rupture of the thoracic aorta and the other from cardiac arrhythmia.

Average serum creatinine after 5 years of follow-up was 154 ± 22 μmol/l.

Reasons for loss of graft function are shown in Table 4.

Table 4 Reasons for loss of graft function

Reasons for graft loss	Number of patients
Chronic graft nephropathy	4
Primary graft non-function	1
Lung and graft TB*	1
**CMV infection	1
IgA nephropathy	1
Total	8

* Tuberculosis; ** Cytomegalovirus

Figure 3 shows grafts survival at our Center.

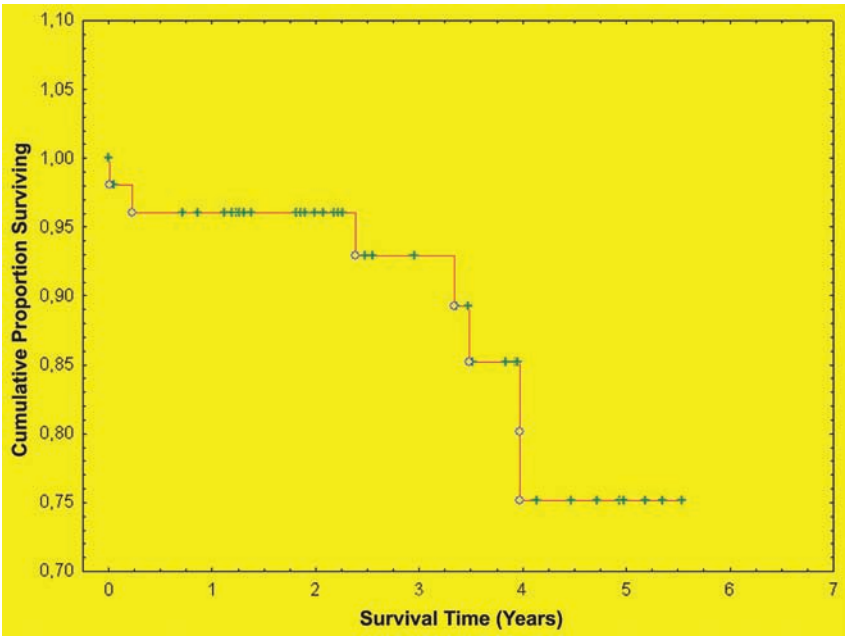

Figure 3. Grafts survival. One, two and five-year graft survivals accounted for 96%, 96% and 75%, respectively

Figure 4 shows patient survival at our Center.

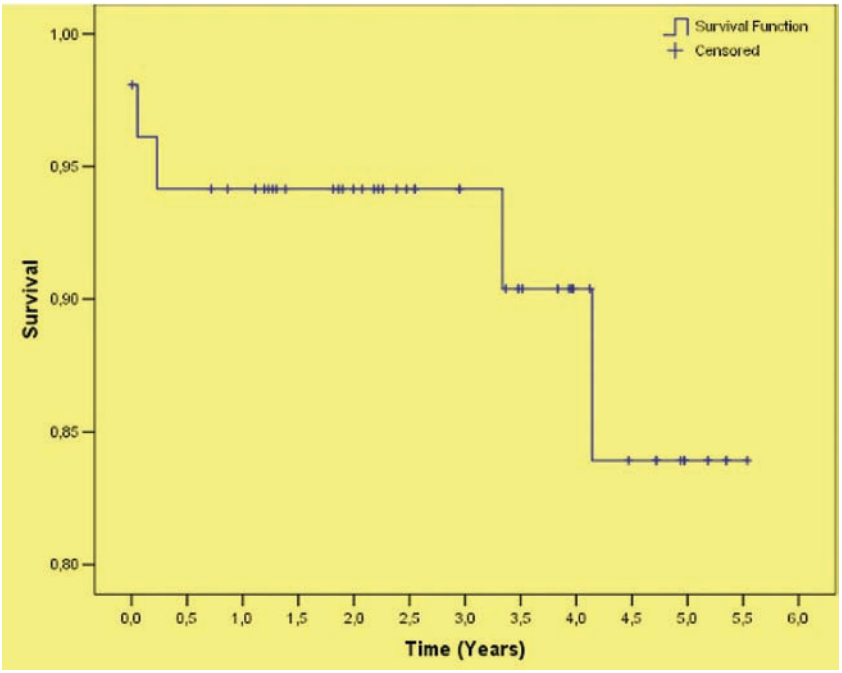

Figure 4. Patient survival. One, two and five-year patient survivals accounted for 94%, 94% and 84%, respectively

Figure 5. shows patients with functioning grafts survival at our Center.

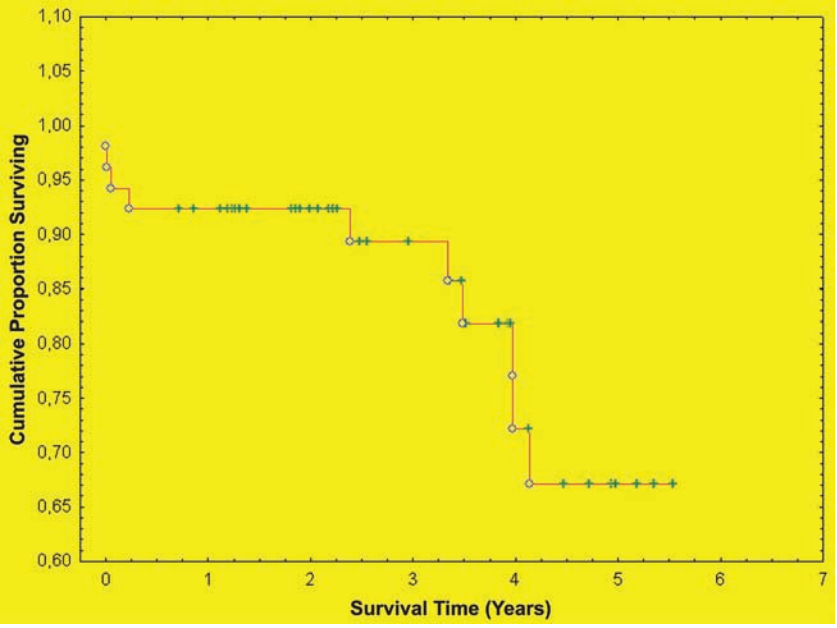

Figure 5 Patients with functioning grafts survival. One, two and five-year survivals of patients with functioning grafts accounted for 92%, 92% and 67%, respectively

There were no complications related to donors over the two years of follow-up.

Discussion

There were 52 living donor kidney transplantations at University Clinical Center Tuzla, Bosnia and Herzegovina, in the period from 1999 through 2004. The one year survival rate at our Center does not differ from the survival rate in Western Europe and USA (3). Five year survival rate of patients with functioning grafts is 67%, which is less than the average of 75%, but any result between 65-75% seems to be acceptable.

One patient underwent pre-transplant nephrectomy, even though reflux was also found in the other kidney, but it was not considered vulnerable to infection.

Bladder augmentation procedure for small bladder capacity was done in one patient. That patient was anuric for 10 years before transplantation.

Since the need for organs is growing, the trend should be toward deceased transplants.

In May, 2005 Parliament of Federation of Bosnia and Herzegovina adopted a law on deceased transplant program applicable to the Federation, only. This program represents the "Spanish model", which has proved most successfull worldwide.

First deceased kidney transplant in Bosnia and Herzegovina was performed at University Clinical Center Tuzla on June, 22 2006. On that occasion the liver was transplanted, too.

Conclusions

Kidney transplantation survival rates at University Clinical Center Tuzla, Bosnia and Herzegovina from 1999-2004 did not differ from the rates achieved in developed countries worldwide. The existing program needs to be updated, particularly with re-

spect to donor selection regarding biological and chronological age.

Aknowledgment

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