



Survival of Renal Transplant Patients: Data From a Tertiary Care Center in Turkey

H. Soylu^a, M. Oruc^b, O.K. Demirkol^a, E.S. Saygili^a, R. Ataman^b, M.R. Altiparmak^b, S. Pekmezci^c, and N. Seyahi^{b,*}

^aDepartment of Internal Medicine, Cerrahpasa Faculty of Medicine, Istanbul University, Istanbul, Turkey; ^bDivision of Nephrology, Department of Internal Medicine, Cerrahpasa Faculty of Medicine, Istanbul University, Istanbul, Turkey; and ^cDepartment of General Surgery, Cerrahpasa Faculty of Medicine, Istanbul University, Istanbul, Turkey

ABSTRACT

Objective. Data on transplantation survival is widely available for developed countries where cadaveric transplantation is the dominant transplantation type. We aimed to assess patient and graft survival and to determine the possible factors affecting graft survival in a developing country where kidney transplantations were mainly performed from living donors.

Methods. We retrospectively analyzed data from 427 adult kidney transplantations performed at our center from January 1990 to November 2010. We collected data from patient files, including characteristics of the recipients and donors, transplantation-related factors, post-transplantation features, causes of graft loss, and patient death. The Kaplan-Meier method was used to analyze survival, and Cox regression analysis was used to evaluate the effects of multiple factors on graft survival.

Results. Most of the recipients (82.6%) received their organs from living donors. One-year and 5-year graft survival rates were 87.5% and 78.3%, respectively, where the 5-year graft survival rates were 87.1% for living donors and 74.8% for cadaveric donors. The 1-year and 5-year patient survival rates were 90.9% and 88.9%, respectively. Univariate analysis showed that predictors for better graft survival were serum creatinine levels <1.5 mg/dL at 1 month after transplantation, proteinuria <500 mg/d at 1 year after transplantation, use of tacrolimus and mycophenolic acid derivative-based immunosuppression at baseline, living-donor transplantation, and transplantations performed in the years 2000–2010.

Conclusions. We report data on kidney transplantation in an emerging country where living-donor transplantation constitutes a large proportion of kidney transplant activities. Modern immunosuppressive medications help to achieve a better survival. Our 5-year results are similar to those of developed countries.

RENAL transplantation is considered to be the best treatment choice for chronic kidney disease patients. Survival and quality of life after renal transplantation are better compared with dialysis [1,2]. During the past 2 decades, introduction of new immunosuppressive drugs has been associated with a decline in the prevalence of acute rejection and an improvement in 1-year graft survival [3–5]. However, in contrast to short-term survival, long-term outcomes of both transplant recipients and their grafts have not improved as expected [6]. Data on transplantation survival are widely available for developed countries, where

cadaveric transplantation is the dominant transplantation type. However, these data are largely missing for developing countries, where living-donor transplantation constitutes a large proportion of kidney transplantation activities. The aim of the present study was to assess graft and patient survival in renal transplant patients in an important center in Turkey.

*Address correspondence to Nurhan Seyahi, Department of Nephrology, Cerrahpasa Faculty of Medicine, Istanbul University, Istanbul, 34098 Turkey. E-mail: nseyahi@yahoo.com

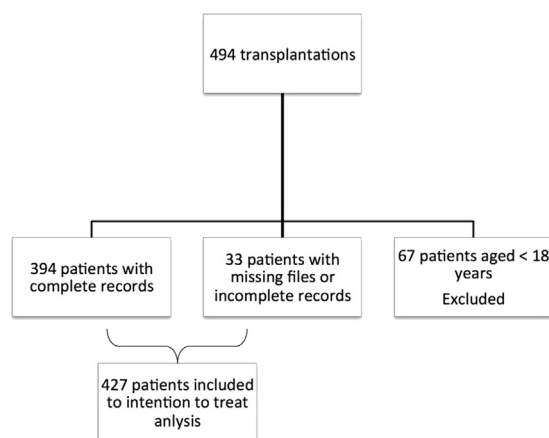


Fig 1. The enrollment of patients in the study.

METHODS

From January 1990 to November 2010, 494 renal transplantations were performed in our tertiary care transplantation center. Sixty-seven patients who were aged <18 years at the time of transplantation were excluded from the study. We analyzed outcomes in 394 patients for whom we had complete information. Thirty-three patients whose files were missing were included only in intention-to-treat analysis. The enrollment of the patients in the study is shown in Figure 1.

From patient files, we collected data on demographic and clinical characteristics of the recipients: age, sex, weight and height at the time of transplantation, primary kidney disease, dialysis type and time on dialysis, comorbid diseases, and presence of hepatitis B, hepatitis C, diabetes mellitus, and hypertension at the time of transplantation. We also collected data regarding transplantation-related factors and post-transplantation features: transplantation time, donor type, number of HLA class I and II mismatches, immunosuppression at the time of transplantation and at the time of last visit, history of delayed graft function (DGF), occurrence of acute rejection in the 1st month after transplantation, and occurrence of infectious diseases in the 1st month after transplantation. Renal function was expressed as serum creatinine level at the following time points: 1 month, 3 months, 1 year, 5 years, and the last visit after transplantation. Diabetes mellitus, hypertension, and hyperlipidemia and proteinuria status at 3 months, 1 and 5 years, and the last visit after transplantation were retrieved from the patient files. Data on (if done) last biopsy time and indication, time and causes of graft loss, and patient death were recorded. We also recorded the use of prophylactic drugs: aciclovir, ganciclovir, and valganciclovir for cytomegalovirus (CMV) prophylaxis in the 1st 3 months after transplantation. Donor sex, age, and last serum creatinine level before organ donation were also recorded.

Definitions

Body mass index (BMI) was calculated as weight/height²; comorbid diseases were evaluated according to antidiabetic, antihypertensive, and antilipemic treatment; infectious disease in the 1st-month follow-up was defined according to clinical criteria; hepatitis B was defined as having hepatitis B surface antigen (HBsAg), and hepatitis C was defined as having hepatitis C antibody (anti-HCV); pre-transplantation time on dialysis was calculated from the beginning of dialysis to the date of transplantation; DGF was defined by the need for dialysis in the 1st week after transplantation because of an

absence of or a significant improvement in graft function; acute rejection episode was defined as either biopsy-proven rejection or antirejection treatment without biopsy; graft loss was defined as return to dialysis or retransplantation; and death with functioning graft was also counted as graft failure.

A cutoff age of 30 years was used to group the recipients, and a cutoff age of 50 years was used to group the donors.

Statistical Analysis

Data were expressed as mean \pm SD unless otherwise stated. Categorical variables were compared with the use of chi-square test. Continuous variables were compared with the use of independent-sample or paired-samples *t* test as appropriate. We used the Kaplan-Meier method to analyze survival. Cox regression analysis was used to evaluate the effects of multiple factors on graft survival. All tests were performed with the use of SPSS for Windows version 17.0 software (SPSS, Chicago, Illinois). A *P* value of <.05 was considered to be statistically significant.

Ethics

Ethics Committee approval from Istanbul University Cerrahpasa Medical Faculty was obtained. The study was in adherence with the Helsinki Declaration of 1975 (as revised in 1983).

Table 1. Recipient and Donor Baseline Characteristics in Recipients at the Time of Transplantation From Both Living and Deceased Donors

Age at transplantation (y)	32.3 \pm 10.1
Sex (male)	64%
BMI (kg/m ²)*	22.1 \pm 4.4
Cause of chronic renal failure	
Chronic glomerulonephritis	27.8%
Urologic causes	14.8%
Hypertension	8.8%
Amyloidosis	5.0%
Chronic pyelonephritis	4.1%
Adult polycystic kidney disease	2.2%
Diabetes	1.4%
Unknown origin	32.8%
Others	3.0%
Type of dialysis (hemodialysis)	89.5%
Time on dialysis (mo)	29.1 \pm 29.1
HLA mismatches [†]	3.0 \pm 1.2
Diabetes mellitus	2.3%
Hypertension	29.9%
Hepatitis B	1.1%
Hepatitis C	9.3%
Acute rejection	21.2%
Delayed graft function	20.6%
Infection	19.6%
CMV prophylaxis	
Aciclovir	70.9%
Valganciclovir	15.7%
Ganciclovir	9.1%
Donor characteristics	
Age (y)	48.1 \pm 10.2
Male	36.5%
Pre-transplantation creatinine (mg/dL)	0.8 \pm 0.1

Abbreviations: BMI, body mass index; CMV, cytomegalovirus.

*Data were available for 340 patients.

[†]Data was available for 321 patients.

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