



Donor Contraindications to Living Kidney Donation: A Single-Center Experience

K. Mağden^a, F.B. Ucar^b, A. Velioglu^c, H. Arıkan^c, Ş.C. Yeğen^d, S. Tuğlular^{c,*}, and İ.Ç. Özener^c

^aDivision of Nephrology, Department of Internal Medicine, Bülent Ecevit University School of Medicine, Zonguldak; ^bMarmara University School of Medicine, ^cDivision of Nephrology, Department of Internal Medicine, and ^dDepartment of General Surgery, Marmara University School of Medicine Hospital, Turkey

ABSTRACT

Objective. Kidney transplantation is the treatment of choice in end-stage renal disease. In Turkey, the inadequate cadaveric donor supply has resulted in transplantation from living kidney donors (LKD) in 80% of transplant operations. LKD candidates undergo a thorough general medical evaluation and are approved to donate their kidneys only if no contraindication is found. In our study we aimed to investigate the reasons and rate of denial for living kidney donation in our center.

Methods. We included all LKD candidates who applied to our center between June 2012 to June 2014. Demographic data, rate of rejection, and the reasons for denial to organ donation were analyzed retrospectively.

Results. Of the 97 LKD candidates included in the study, 60 (62%) were unable to donate their kidneys. Among the reasons for denial were hypertension with target organ damage in 30% (n = 18), immunologic reasons in 23% (n = 14), impaired renal function in 20% (n = 12) cardiovascular reasons 13.3% (n = 8), diabetes mellitus in 10% (n = 6), malignancy in 10% (n = 6), obesity (body mass index > 35 kg/m²) in 5% (n = 3), and miscellaneous in 18.3% (n = 11). There were >1 reasons in 13 candidates.

Conclusions. The problems detected in donor candidates offer a possibility for early detection of disorders and increased awareness.

KIDNEY TRANSPLANTATION is by far the best renal replacement option to be offered to patients with end-stage renal disease (ESRD) [1]. Long waiting times on the waiting lists owing to a low supply of cadaveric organs direct the individual patients to transplantation from living donors. A comprehensive medical evaluation of the donor candidates is imperative before approval for living kidney donation. The aim of our study was to investigate the reasons and rate of denial for living kidney donation in our center.

MATERIALS AND METHODS

All living kidney donor (LKD) candidates (n = 108) of 85 potential kidney recipients who applied to Marmara University Medical School Teaching Hospital affiliated to Ministry of Health transplantation center between June 2012 to June 2014 were included in the study. Data were collected and analyzed retrospectively. Demographic data of living donor candidates, rate of denial, and the

reasons for denial to organ donation were determined. Values are expressed as mean ± standard deviation.

RESULTS

A retrospective analysis of our data revealed that of the 97 LKD candidates evaluated for the appropriateness of living kidney donation, 60 (62%) were denied for organ donation. The demographic data of the accepted and denied donors are given in Table 1. There was no difference between the 2 groups with regard to demographic data, except that the candidates denied to donate their kidneys were significantly older than the accepted donors (51.87 ± 13.73 vs 44.03 ± 8.99;

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*Address correspondence to Serhan Tuğlular, MD, Hamam Sok. 8/4 Caddebostan, Kadıköy, Istanbul, Turkey. E-mail: serhantuglular@yahoo.com

Table 1. Donor Demographics [11]

Factor	Donors Accepted (n = 37)	Donors Denied (n = 60)	P
Age (mean ± SD)	44.03 ± 8.99	51.87 ± 13.73	.015
Sex (M/F)	12/25	32/28	NS
Donor relation to recipient, n (%)			NS
Parent	14 (37.8)	20 (33.6)	
Sibling	13 (35.1)	16 (26.6)	
Spouse	6 (16.2)	18 (30)	
Child	3 (8.1)	3 (5)	
Second- or third-degree relative	1 (2.7)	3 (5)	

Abbreviation: F, female; M, male; NS, not significant.

$P < .05$). Contraindications for organ donation were hypertension in 30% ($n = 18$), immunologic reasons in 23.3% ($n = 14$), impairment in renal function including proteinuria and glomerular hematuria in 20% ($n = 12$), cardiovascular reasons in 13.3% ($n = 8$), diabetes mellitus in 10% ($n = 6$), malignancy in 10% ($n = 6$); obesity (body mass index $> 35 \text{ kg/m}^2$) in 5% ($n = 3$), and miscellaneous in 18.3% ($n = 11$). Overall 47 denied candidates (78.3%) had 1 reason and 13 (21.7%) had >1 reason for denial (Table 2). In multiple logistic regression analysis, none of the independent variables, including demographic data and the reasons for denial, were significantly independently associated with denial to donation.

DISCUSSION

In our transplant center we have 62% denial rate among the LKD candidates. The most frequent contraindication is hypertension with or without target organ damage in 30% of the cases. Immunologic reasons like cross-positivity or presence of donor-specific antibodies in the potential recipient was the second most common cause (23.3%) and impaired renal function including, hematuria, proteinuria, and/or low glomerular filtration rate was the third most common cause for denial of the potential living donors. The denied donor candidates were significantly older than the accepted donors. However, in multiple logistic regression

Table 2. Contraindications to Kidney Donation

Reasons	n (%)
Hypertension*	18 (30)
Immunologic	14 (23.3)
Impairment in renal function [†]	12 (20)
Cardiovascular	8 (13.3)
Diabetes mellitus	6 (10)
Malignancy	6 (10)
Obesity (body mass index $> 35 \text{ kg/m}^2$)	3 (5)
Miscellaneous	11 (18.3)

*Hypertension with target organ damage and/or hypertension control requires >1 with 1 antihypertensive medication.

[†]Impairment in renal function including microalbuminuria and glomerular hematuria.

analysis where all demographic features as well as reasons for denial were entered, none of the independent variables were significantly independently associated with denial to organ donation. In Turkey, 80% of renal transplantations are from living donors; therefore, it is important to examine thoroughly each and every candidate, despite possible pressures imposed on the transplant team. This issue has been studied previously by 2 other centers in our country reporting 10.8% ($n = 25/231$) and 48.5% ($n = 261/538$) denial rates. The most common contraindications were also hypertension. The other most frequent reasons were renal impairment, diabetes, and urologic problems in the donors [2,3]. Denial rates and reasons reported from Canada on the other hand was 50.2% in the first step in their stepwise evaluation and a further 10.3% in the second step [4]. Because their initial health screen includes the history of cancer, hypertension, diabetes, heart disease, hepatitis, nephrolithiasis, and renal disease, we can assume that the most common reasons for denial are also medical conditions in Canada. Exclusion criteria for donation at our center include ABO incompatibility, cross-positivity, and/or donor-specific antigen positivity; hypertension with target organ damage and/or hypertension control requiring >1 antihypertensive medication; impaired renal function, including glomerular hematuria and proteinuria; human immunodeficiency virus, hepatitis B virus, and/or hepatitis C virus positivity in viral serologic screening; diabetes; impaired glucose tolerance; history of cancer; documented cardiovascular disease; body mass index $> 35 \text{ kg/m}^2$; nephrolithiasis; psychiatric and/or mental disease; history of thrombosis or emboli; and urological abnormalities. The criteria for acceptable LKDs have been defined in various societies' guidelines [5–7] and in individual reports [8]. We allow patients with asymptomatic nephrolithiasis to donate. Mandelbrot et al [9] found that 50% of transplant programs use a body mass index cutoff of 35 kg/m^2 . Fifty percent of programs allowed donation for hypertensive patients controlled on 1 medication, and some programs allow patients on ≥ 2 antihypertensive medications to donate [9]. It has also been reported that 25% of centers exclude patients with a history of renal stones, whereas 25% accept these patients without requiring a metabolic workup [9]. Aiming to increase renal transplantation rates, the criteria for acceptable living donor seems to be broadening continuously. The British Transplantation Society has defined acceptable creatinine clearance in relation to donor age with an aim to predict the possibility of developing ESRD in the remaining life time of the donor [7].

The United Network for Organ Sharing/Organ Procurement and Transplantation Network reported mortality during donor nephrectomy to be 0.04%, and long-term chronic kidney disease (ESRD/dialysis and/or requiring renal transplantation) in 0.10%–0.52% of kidney donors. It has been reported that of the 81,960 kidney donors followed since 1987, 36 (0.040%) are currently on the renal transplant waiting list [6]. Until recently, it was generally accepted that living kidney donation was not associated with

increased long-term risk of serious adverse effects [10]. However, most previous studies on this topic were limited by inadequate follow-up and/or poorly matched controls. Mjøen et al [11] recently reported that the risk of mortality increased by 1.3 times and ESRD risk increased 11.4 times in LKD compared with controls who would have been eligible for donation. Importantly, this increased risk was apparent only after 10 years of follow-up and was likely to have been influenced by genetic risk of kidney disease [11]. Especially in Turkey, where 80% of kidney allografts are from LKDs, this important study increases the urgency to develop better strategies to more clearly define the optimal approach for evaluating LKDs.

In conclusion, meticulous evaluation of the living donor candidates is essential and early detection of various medical problems offers early diagnosis and management opportunities.

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