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EVALUATING THE CAUSES FOR REJECTION OF POTENTIAL LIVE-RENAL DONORS: SINGLE CENTER EXPERIENCE

POTANSİYEL CANLI BÖBREK VERİCİLERİNİN REDDEDİLME NEDENLERİNİN DEĞERLENDİRİLMESİ: TEK MERKEZ DENEYİMİ

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ABSTRACT

Objective: Renal transplantation provides better outcomes for end stage renal disease patients in comparison to dialysis. Living kidney donation provides better long-term patient and graft survival compared to deceased-donor transplantations. In the long term, complications such as mild proteinuria, an increase in blood pressure, preeclampsia, end stage renal disease and mortality are the main problems for donors. In this study, we aimed to evaluate the causes of kidney donor rejections in our hospital.

Material and Method: The medical files of individuals presented as donor candidates were retrospectively examined. Screening tests, cross match test, tissue typing, routine evaluation of cardiologic system, respiratory system, psychiatric condition and cancer screenings, if necessary, were performed as part of the donor candidate work-up. Data was expressed as mean±SD.

Results: Two hundred and forty five individuals presented themselves as donor candidates in our hospital. Of these, 118 patients could not be donors. Of these 118 individuals, 21 potential donors were rejected donor despite completing all evaluations. The main causes for rejection of 97 individuals were hypertension, diabetes mellitus-obesity and asymmetry in glomerular filtration rate/parenchymal abnormalities. In addition, we diagnosed cancer in 5 potential donors.

Conclusion: Potential kidney donor evaluation is of paramount importance in order to minimize possible risks.

Keywords: Renal transplantation, living kidney donor candidate, hypertension

ÖZET

Amaç: Böbrek nakli diyaliz tedavisine gore son dönem böbrek yetmezlikli hastalarda daha iyi sonuçlar sağlamaktadır. Canlıdan böbrek nakli ise kadavradan böbrek nakline gore daha iyi hasta ve greft sağ kalımı sağlar. Öte yandan, uzun dönem komplikasyonlar olarak hafif proteinüri, kan basıncında artış, preeklampsi, son dönem böbrek hastalığı ve ölüm hala vericiler için önemli sorunlardır. Bu çalışmada, hastanemizdeki böbrek verici reddedilme nedenlerini değerlendirmeyi amaçladık.

Gereç ve Yöntem: Verici adaylarının tıbbi bilgileri retrospektif olarak incelendi. Tarama testleri, cross match testi, doku tiplendirilmesi, rutin kardiyolojik, solunum sistemi, psikiyatrik durumlarının değerlendirilmesi ve gerekliyse kanser taraması yapıldı. Veriler ortalama±standard sapma olarak gösterildi.

Bulgular: İki yüz kırkbeş birey verici adayı olarak başvurdu. Bunlardan 118'i donor olamadı. Bunların 21 tanesi tüm değerlendirmeler yapıldıktan sonra verici olmaktan vazgeçti. Kalan 97 bireyin en sık reddedilme nedenleri hipertansiyon, diyabetes mellitus-obezite, glomerular filtrasyon oranında asimetri-parankimal bozukluklar idi. Ayrıca , beş verici adayında kanser tanısı koyduk.

Sonuç: Potansiyel böbrek verici adaylarının değerlendirilmesi, ileride çıkabilecek riskleri azaltmak için hayati önem taşımaktadır.

Anahtar Kelimeler: Böbrek nakli, canlı böbrek verici adayı, hipertansiyon

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INTRODUCTION

Renal transplantation provides better outcomes for end stage renal disease (ESRD) patients in comparison to dialysis in the long-term (1). Therefore, it is the best treatment option for selected patients. In the 2008 National Kidney Foundation (NKF)-K/DOQI conference, the identification of potential living donors was recommended because of the shortage of cadaveric donors (2). Aside from this, living kidney donation provides better long-term patient and graft survival compared to deceased-donor transplantations. As a result, living kidney donation is increasing in many countries and Turkey is the most active country for living kidney transplantation per million of population (3-5). Additionally, short term per-operative complications and long term complications such as mild proteinuria, an increase in blood pressure, preeclampsia, ESRD and mortality should always be kept in mind for kidney donors (6-11). Consequently, donor evaluation is vital in order to minimize possible risks.

In this study, we aimed to evaluate the causes of kidney donor rejections in our hospital.

MATERIAL AND METHOD

The medical files of individuals presented as donor candidates between January 2012 and December 2018 were retrospectively examined. The medical files were evaluated and demographic, clinical and laboratory data were collected. Data from the medical records was collected by a physician who was not aware of the plans for those individuals.

Our study work-up for donor candidates:

1- Screening tests: Blood type, Body mass index (BMI), Blood pressure measurement (office-home-ambulatory blood pressure monitoring), blood count, electrolytes, blood glucose, urea, creatinine, liver function tests, lipid profile, urine dipstick, 24-hours urine sampling, Cytomegalovirus, hepatitis serology B, C, HIV, metabolic panel for those with a history of kidney stones, abdomen ultrasonography, ECG, lung graphy, PPD, Beta-HCG for females.
2- Cross match test, tissue typing and donor specific antibody evaluation.
3- Routine evaluation of cardiologic system, respiratory system, psychiatric condition.
4- Mammography evaluation for females over 40 years old, gynaecological examination and smear for females over 21 years old.
5- Urologic cancer evaluation for males over 50 years old (at an earlier age if there is family history).
6- Gastrointestinal evaluation including colonoscopy and endoscopy if necessary.
7- Fundus examination if necessary.
8- DTPA scintigraphy, Renal MR angiography.

Contraindications for kidney donation in our centre were mostly in line with Organ Procurement and Transplant Network[12] (Table 1).

Table 1: Contraindications for kidney donation

1-	Uncontrolled hypertension with at least two drugs or history of hypertension with end-organ damage
2-	Diabetes mellitus
3-	Morbid obesity, most commonly defined as BMI >35 kg/m^2
4-	Active viral infection
5-	Active or incompletely treated cancer
6-	Mentally incapable of making an informed decision
7-	High suspicion of illegal financial exchange between donor and recipient
8-	Uncontrolled, diagnosable psychiatric conditions
9-	ABO incompatibility
10-	Proteinuria (>150mg/day proteinuria, >30mg/day microalbuminuria) and/or hematuria
11-	Impaired renal function
12-	History of malignancy, especially lung, breast, renal or urologic, gastrointestinal, or hematologic cancers and melanoma
13-	Asymmetry in GFR, parenchymal abnormalities, vascular abnormalities, or urological abnormalities

Statistical Analysis

Data was expressed as mean±SD. All computations were made using the SPSS for Windows v.17.0 software (SPSS Inc., Chicago, IL, USA).

RESULTS

One hundred and eighty two kidney transplantations were performed during this period. One hundred and twenty seven of them were from live donors (69.7%). Two hundred and forty five individuals presented themselves as donor candidates in our hospital between January 2012 and December 2018. Of these, 118 individuals could

Table 2: Demographic, clinical and laboratory findings of potential donors

Findings	**n:118**
Age (year)	50.8±12.8
Gender (female/ male)	66 (55.9%) / 52 (44.1%)
Body Mass Index	27±4.67
Creatinine (mg/dL)	0.76±0.12
Proteinuria (mg/dl)	126.5±46.3
Microalbuminuria (mg/dl)	20.6±16.2
Potassium (mEq/L)	4.2±1.1
Sodium (mEq/L)	134.5±4.5
Glucose (mg/dL)	112.2±22.4

not be a donor. The demographic and laboratory findings of these 118 patients are shown in Table 2.

There was a male predominance among potential donors (55.9%). The potential donors ranged in age from 26 years to 79 years. They had BMI between 18.7 kg/m^2 and 39.7 kg/m^2.

Sixty three of the individuals (53.8%) had a genetic relationship with the recipient. Most of them were either parents (55.5%) or siblings (28.5%). The remainder were either offspring or uncles. In terms of non-genetically related potential donors, most of them were spouses (72.2%), the rest of them were friends.

Of 118 individuals, 21 potential donors were rejected despite completing all evaluations. Seven of them (33.3%) were siblings, six of them (28.5%) were friends. Three of them were spouses, four of them were parents, one of them was an uncle.

The main causes for rejection out of the 97 potential donors are shown in Table 3. Hypertension, diabetes mellitus, asymmetry in GFR/parenchymal abnormalities, cross match positivity/DSA with MFI value higher than 5000, obesity and nephrolithiasis were the most frequent causes for rejection, respectively. In terms of hypertension, 10 patients had uncontrolled hypertension with at least two drugs, three patients had hypertensive retinopathy, two patients had microalbuminuria and two patients had left ventricular hypertrophy.

Table 3: Main causes for rejection

	n:97 (%)
Hypertension	17 (17.6%)
Diabetes Mellitus	14 (14.5%)
Asymmetry in GFR, parenchymal abnormalities	11 (11.4%)
Cross match positivity/ Presence of DSA	11 (11.4%)
Obesity	10 (10.3%)
Nephrolithiasis	10 (10.3%)
Malignity	5 (5.1%)
Persistent proteinuria and/or hematuria	5 (5.1%)
Presence of hepatitis B	4 (4.1%)
Persistent low glomerular filtration rate	3 (3.1%)
Cardiologic problems	1 (1%)
Psychiatric disorders	1 (1%)
Ethical problems	5 (5.1%)

We diagnosed cancer in 5 potential donors. Three of them were thyroid papillary carcinoma, one of them was renal cell carcinoma and one of them was cervical carcinoma. Interestingly, we detected a patient with Fabry disease mutation while evaluating persistent hematuria.

DISCUSSION

This study showed that our multidisciplinary donor work-up rejected 48.1% of the potential donors. This ratio was similar to the ratio in the studies of Perlis et al. and Larsen et al. (50.2%, 48%, respectively) (13,14). However, Thuesen et al. found that rejection rate was only 22% in their study (15). On the other hand, Saunders et al. reported that 87% of potential donors failed to proceed to organ donation (16). We believe that it is difficult to compare rejection of donor candidates in various studies because of the variability in the overall work up process.

In terms of causes of rejections, hypertension was the most seen etiology (17.6%) in our study. Whereas, Thuesen et al. from Denmark showed that hypertension was only 5.9% of the rejections. However, it should be noted that the prevalance of hypertension in Turkey is 1.5 fold compare to Denmark possibly due to geographical dietary habits (17, 18).

Regarding other causes of rejection, the ratio of diabetes mellitus-obesity was similar to the ratio in the study of Thuesen et al.

We diagnosed cancer in 5 patients. Three of them were thyroid papillary carcinoma. We performed a thyroid ultasonography on these three donor candidates due to the fact that these patients had a history of thyroid nodule. However, most of the guidelines for potential donors do not recommend a routine thyroid ultasonography. We believe that thyroid ultrasonography which is a cheap and easy method to detect nodules and malignity, may be added to kidney donor work up.

We eliminated 10.4% of potential donors due to nephrolithiasis. One of the patients had hypocitraturia with a history of nephrolithiasis. Such metabolic abnormalities may indicate a risk of nephrolithiasis in the future. Therefore, they should be a part of evalution in patients with a history of nephrolithiasis.

In our study, 21 patients were rejected as donors despite completing all evaluations. Most of them were either siblings or friends. Potential donors can sometimes be pressurised into the process by the recipient. However, when donation time comes closer, they may give up due to pressure placed on them by their own families. In addition, rumours about the risk of donation is another problem in our country. Therefore, transplant nephrologists should be involved in providing information about transplantation.

The most important limitation of our study is its retrospective nature. It may not be appropriate to infer cau-

sality in retrospective studies. Despite its limitation, this study is important due to the fact that it shows our experience while evaluating potential donors.

In conclusion, a donor becomes a patient in order to improve the outcome and survival of another individual though he/she is not a patient prior to surgery. Therefore, the potential donor evaluation is of paramount importance in order to minimize possible risks.

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