

Evaluation of the Reasons for Nonacceptance of Kidneys Retrieved or Offered in Rio Grande do Sul and Pais Vasco

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ABSTRACT

In Rio Grande do Sul (RS), as in Pais Vasco (PV), some kidneys are retrieved or offered and not accepted for transplantation. This study aimed to evaluate the profile of the available kidneys and the reasons for them not being accepted in the 2 regions, and to compare the characteristics of the organs and reasons for refusal. All of the kidneys retrieved or offered in RS in December 2012 and in PV from September to December 2012 were evaluated. Data were collected from each local donation registry. There were 61 kidneys available in RS and 61 in PV in the study period. Of these, 16 kidneys (26%) in RS and 27 (44%) in PV were not implanted. The age of the donors was higher in PV (59 years) than in RS (45 years; $P = .000$), as was the age of the donors of accepted kidneys (62 and 41 years old, respectively; $P = .000$). The proportion of donors considered to be “extended criteria” was higher in PV (78%) than in RS (47%; $P = .001$), and the refusal rate of the kidneys from these donors was the same in the 2 regions. The reasons for not using the kidneys in RS and in PV were similar and absolute. It is concluded that there is no organ waste in the 2 regions, but that the offer of kidneys can be expanded in RS by considering elderly donors for evaluation, even if this means a higher number of refused organs.

NOWADAYS, the main obstacle for a higher number of transplants is the absolute organ shortage. The use of organs from extended-criteria donors may partially reduce this problem. Otherwise, procurement from such donors causes a growing number of extracted organs with uncertain possibilities for use. In 2012 in Rio Grande do Sul, Brazil (RS), there were 601 available kidneys (locally retrieved or offered from the National Transplantation Agency), of which 483 (80%) were implanted and 118 were refused [1]. In 2011 in Pais Vasco, Spain (PV), the numbers of available and refused kidneys were 163 and 9, respectively [2]. Aiming to increase the number of transplanted kidneys, the use of some of the nonaccepted organs has been considered. For this purpose, the profile of the retrieved and offered kidneys in RS and PV were studied to evaluate and compare the reasons for nonacceptance. To verify if there are any refused kidneys that could have been transplanted, we evaluated the reasons of nonacceptance of kidneys extracted or offered in RS over a period of time and compared them with the reasons in PV.

METHODS

This is a contemporary cross-sectional study in which data were collected on all kidneys extracted in RS or offered to RS by the national transplant network (Central Nacional de Transplantes [CNT]) of Brazil in December 2012. Retrospectively, data were also collected on kidneys retrieved in PV or offered to PV by the Organización Nacional de Trasplantes (ONT) of Spain from September to December 2012. In both places, data were collected from the local official transplant registry. Data were collected regarding donor, organ, retrieval process, and biopsy variables. To define “extended-criteria donors,” in RS the national legal regulations were used [3], which are similar to United Network for Organ Sharing criteria [4]. In PV, any donor with age ≥ 60 years or who had diabetes mellitus for >10 years, severe hypertension or vascular peripheral disease, or stroke as cause of death was considered to be “extended criteria” [5]. In both RS and PV, kidneys are biopsied when they come from extended-criteria donors, when clinical or

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laboratorial data suggest acute injury, or as requested by the transplant coordinator. In RS, the morphologic alterations are graded through a system modified from the Remuzzi score [6]. In PV, the morphologic alterations are graded by a numeric scale in which a score <5 allows the kidney to be transplanted to any recipient; scores from 5 to 8 indicate a kidney to be transplanted in elderly recipients or implanted "in pair"; and scores >8 indicate a kidney not appropriate for transplantation [5,7,8]. The main variable of the present study was whether or not every kidney available was used. The decision of accepting or not the organ for transplantation was taken by the individual transplant services according to their own criteria. Comparative analyses were performed for the variables within each group (RS and PV) and then compared with each other. Data were analyzed in SPSS 12.0 by means of bivariate analysis with Student *t* and chi-square tests, with a 95% confidence level.

RESULTS

There were 61 kidneys available in RS (42 extracted locally and 19 offered nationally), and 61 in PV (44 extracted locally and 17 offered nationally) in the study period. From these, 16 kidneys (26%) in RS and 27 (44%) in PV were not accepted for transplantation. The donor characteristics in RS and in PV are presented in Table 1. Donor mean age was higher in PV (59 years) than in RS (45 years; $P = .000$). In RS, 50 donors (81%) were <60 years old, and in PV 40 donors (65%) were >60 years old ($P = .000$). For the analysis, the places of organ extraction were stratified into 4 categories in each country, homologously between the 2 regions, according to the distance to the transplantation center: from nearest to furthest, Porto Alegre city, the metropolitan area, Rio Grande do Sul state, and offered nationally in Brazil, and Hospital Cruces, Viscaya county, Pais Vasco region, and offered nationally in Spain. There was no difference among places of organ extraction or cause of death in the 2 regions (chi-square: $P = .109$ and $P = .244$, respectively). In RS, 35 donors (57%) had type O blood, whereas in PV 34 donors (57%) had type A ($P = .001$). The proportion of donors considered to be "extended criteria" was higher in PV (48 donors, 78%) than in RS (29 donors, 47%; $P = .001$). Thirty kidneys were biopsied in RS and 18 in PV, with 2 cases of acute tubular necrosis in RS and none in PV. Other lesions found in the biopsies were not different between the 2 regions. Other kidney characteristics had no significant differences between RS and PV. Data on the ischemia time of the kidneys in RS were not available and in PV were incomplete. The donor mean ages of accepted kidneys were 41.8 years in RS and 62.3 years in PV ($P = .000$); 27% of the extended-criteria and 17% of the nonextended-criteria kidneys were refused in RS ($P = .345$). In PV, these rates were 48% and 31%, respectively ($P = .270$). Thus, although in PV the acceptance rate of kidneys of any kind was higher than in RS, being extended criteria did not affect the acceptance rate in either region. Nationally offered kidneys were less accepted than local ones in both RS ($P = .008$) and PV ($P = .011$). Other kidney characteristics did not affect the acceptance of the organs in RS or in PV. Table 2 presents the reasons for kidney refusal

Table 1. Characteristics of the Donors in RS and PV, *n* (%)

	RS	PV	<i>P</i> Value
Age (y), mean (SD)	45.10 (20.06)	59.13 (21.28)	.000 [†]
Age group (y)			.000 [†]
<60	50 (81.96)	21 (34.42)	
60–70	5 (8.20)	18 (29.51)	
>70	6 (9.84)	22 (36.10)	
Site of extraction			.109
PA/HC	19 (32.79)	10 (16.39)	
MA/VY	6 (9.84)	10 (16.39)	
RS/PV	17 (26.23)	24 (39.34)	
CNT/ONT	19 (31.15)	17 (27.87)	
Cause of death*			.244
Stroke	28 (63.93)	44 (73.77)	
TBI	26 (24.59)	8 (13.11)	
Other	7 (11.48)	7 (8.20)	
ABO type*			.001 [†]
A	16 (26.23)	34 (57.63)	
AB	4 (6.56)	6 (10.17)	
B	6 (9.84)	2 (3.39)	
O	35 (57.38)	17 (28.81)	
Extended criteria*	29 (47.54)	48 (78.69)	.001 [†]

Abbreviations: RS, Rio Grande do Sul, Brazil; PV, Pais Vasco, Spain; PA, Porto Alegre (Brazil); HC, Hospital Cruces (Bilbao, Spain); MA, metropolitan area of Porto Alegre; VY, Viscaya county; CNT, Central Nacional de Trasplantes (Brazil); ONT, Organización Nacional de Trasplantes (Spain); TBI, Traumatic Brain Injury.

*Unknown <5%.

[†]Significant ($P < .05$).

in RS and in PV. The reasons for nonutilization of kidneys in RS and PV were similar: lesions on organs or vessels, severe alterations in biopsy, or no appropriate recipient. These causes are indisputable. In at least 3 cases there probably was some kind of surgical accident with vascular damage.

DISCUSSION

Since 1987, when Lucas et al [9] reported that kidneys from donors >30 years old had more chances of being refused, a lot has changed. Today, several authors suggest the use of nonoptimal kidneys, isolated or paired, based on clinical or biopsy criteria, preferably for transplantation in elderly recipients [6,10–15]. In the present study, the mean donor age in PV (59 years) was higher than in RS (45 years), as was the mean donor age of the accepted kidneys (62 and 41 years, respectively). The proportion of extended-criteria kidneys was higher in PV (78%) than in RS (47%), but being extended criteria did not affect the acceptance rate in the 2 regions. In PV, more elderly and extended-criteria potential donors were accepted for evaluation, even though that caused more organs to be eventually refused. It seems that in RS there is little refusal of elderly kidneys because these donors are not even considered for evaluation. Reasons for kidney refusal in both regions were consistent with consensual clinical situations, such as vessel or organ lesions and lack of a recipient, mostly pediatric or AB type (Table 2). It can not be assumed that any of these kidneys could have been implanted anywhere. Ischemia time of the

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