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Is Donor Age an Important Factor in Cadaveric Organ Donation?

Kadaverik Organ Bağışında Donör Yaşı Önemli Bir Faktör Müdür?

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Abstract/Öz

Introduction: Our liver transplantion center has determined that the organ donation rate is low in young donors. The goal of study was to investigate whether this observation was valid and the causes for rejecting organ donation among family members of young donors.

Methods: The brain death declaration and organ donation rates were analyzed during the study period. The relationship between the organ donation and donor's age was investigated, and factors related to refusing organ donation were also analyzed. A questionnaire including 10 questions was prepared for family members of brain-dead patients, who rejected organ donation. The study was conducted by phone, and conversations were recorded.

Results: Including the years between 2011 and 2015, there was a total of 750 brain death declarations, and 508 of the patients did not approve organ donation. The donor rate under 30 years was lower as compared to the elderly patients (23.8% vs. 32.9%, p=0.026). The most common reasons for refusing organ donation were religious in nature and the anxiety about the corruption of bodily integrity. Sixty-two percent of family members who refused organ donation declared that they would have accepted organ donation if the donor declared accepting organ donation when he or she was alive.

Conclusion: For family members of patients who deceased at young ages emotional attitudes are very important about the decision of organ donation. The testament of person about organ donation is the most important factor affecting the decision of family members.

Keywords: Organ donation, organ transplantation, age

Amaç: Kadaverik organ bağışının ülke geneline göre nispeten yüksek olduğu bölgemizde daha çok yaşlı beyin ölümü olgularının organlarının bağışlandığı dikkat çekmiştir. Bu çalışmanın amacı bu gözlemi doğrulamak ve nedenini araştırmaktır.

Yöntemler: 2011-2015 yılları arasında Bursa bölgemizde organ bağış kayıtları incelenmiş, organ bağışının donör yaşı ile ilişkisi araştırılmıştır. Organ bağışı yapılmayan donörlerin yakınlarına yönelik anket formu hazırlanmış ve cevaplar alınmıştır. Bağış alınamayanlar için hazırlanan 10 soruluk anket telefon görüşmesi ile uygulanmıştır.

Bulgular: 2011-2015 yılları arasında Güney Marmara bölgesindeki (Bursa Bölgesi) hastanelerden toplam 750 beyin ölümü bildirilmiştir. Tüm olgularda organ bağışı oranı %32,3 (247 bağış) olup bu oran 30 yaş altı beyin ölümü olgularında anlamlı derecede düşük olup %23,82 dir (p: 0,026). Red gerekçeleri olarak, en sık dini nedenler ve vücut bütünlüğünün bozulmasının istenmemesi belirtilmiştir. Ulaşılabilen olgularda en çarpıcı cevap olarak "donörün sağlığında organ bağışı vasiyetinde bulunmaması" gerekçe olarak ileri sürülmüştür. Vasiyet durumunda ise olumsuz düşünen ailelerin %62'si organ bağışını kabul edebileceğini bildirmiştir.

Sonuç: Kişilerin sağlığında vermiş olduğu beyanın, ailelerin organ bağışında bulunma kararlarını olumlu yönde etkileyebilecek en önemli faktörlerden biri olduğu görülmektedir.

Anahtar Kelimeler: Organ bağışı, organ nakli, yaş

Introduction

The most important problem of transplantation programs is the inadequacy of cadaveric donors. Current cadaveric donor ratio in Turkey is around 6 per million population (pmp) (1). However, in Spain, which has the highest ratio for cadaveric donors in Europe, that ratio is 40.2 pmp (2). In spite of this, the annual transplantation numbers in our country and Spain are similar. The reason is that the frequency of living donor liver transplantation is 71.6% in Turkey, whereas it is only 2.58% in Spain (1, 2). While the donor ratio in our region (Bursa region) was nearly 1.8 pmp in the past, it increased nearly tenfold and reached the ratio of 10.3 pmp in 2014. In 2016, the highest ratio, which was 20 pmp, was attained (1).

The difficulty in finding cadaveric donors, as the number of patients increased on waiting lists, has multiplied the efforts exerted on the amplification of donor pool. But, these are still not enough. According to our study, to increase the number of cadaveric donors, it is important to inform people, relieve the anxiety about religious issues, and provide some measures encouraging cadaveric organ donation.

In our region, the organ transplantation ratio is relatively higher than in the rest of the country. To the best of our knowledge, the rate of cadaveric organ donation has relatively decreased in young donors as compared to the older ones. Thus, the goal of this study is to verify this observation and also analyze the reasons of organ donation refusal among the family members of young donors.

This study was presented as a poster in Organ Donation Congress, September 2017, Geneva, Switzerland.

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Methods

"Ethical Principles for Medical Research Involving Human Subjects" by the World Medical Association Declaration of Helsinki was the cornerstone for our study, which was conducted in accordance to its principles. The records of organ donation in the Bursa and around the city between 2011 and 2015 were examined and relation between the donor age and organ donation was evaluated. A questionnaire, consisting of 10 questions was given to relatives of braindead patients, who judged and refused the organ donation. After the informed consent was obtained from each study participant by phone prior to applying questionnaire, a survey was conducted by phone, and a form was created and recorded for all answers.

Descriptive statistical analyses were given as the frequency and percentage for categorical variables and as median (minimum-maximum) for continuous variables. Pearson's chi-squared test was applied for comparison of categorical variables between the groups. A $p<0.05$ was accepted as statistically significant. The Statistical Package for Social Sciences (SPSS) 21 (IBM Corp.; Armonk, NY, USA) was used for the statistical analysis.

Table 1. The relationship between age and the organ donation acceptance

Donation	n	Accepted	Refused
Age ≤30	126	30 (23.8%)	96 (76.2%)
Age >31	624	212 (34%)	412 (66%)
n: Total	750	242 (32.3%)	508 (67.7%)
		p=0.026	

Pearson's chi-squared test was used to calculate the p. statistical significance was set at $p<0.05$.

Table 2. Reasons for refusal

REASONS FOR REFUSAL	%
Religious reasons (sin, destiny, will of god)	29.6
Disagreement among the family members	20
Bodily corruption	18.4
Sudden death	17
Attitudes of health professionals	8
Concerns about the appropriate distribution of organs	7

Statistical Analysis

The Statistical Package for Social Sciences 15.0 (SPSS Inc.; Chicago, IL, USA) software package was used to covert raw data obtained from the Each questionnaires into a spreadsheet and to perform statistical analysis. When the data were analyzed, descriptive statistics were compared using frequency, percentage, arithmetic mean.

Results

Between 2011 and 2015 from hospitals in the South Marmara region (Bursa region), a total of 750 brain deaths were reported. Among all the brain death cases, the ratio of organ donation was 32.3% (n=242). The 23.8% of the brain deaths were individuals ≤ 30 years of age (n:30, p=0.026) (Table 1). The mean age was 59 (31-90), and the most common etiology of brain deaths among patients >30 years of age was pathologies such as cerebrovascular diseases and intracranial bleeding with a frequency of 72%. The second most common etiology was trauma in 14.1% of patients. On the other hand, among patients aged ≤ 30, the mean age was 18 (2-30), and the most common etiology was reported to be trauma (traffic accidents and falls from height) with a frequency of 43%, and it was followed by cranial and cardiac pathologies constituting 28% of the cases. Among other reasons for brain death in patients younger than 30 years of age are gunshot injuries, suicides, drownings, carbon monoxide intoxication, perinatal asphyxia, and intracranial tumors.

An approval of 76% (96 of 126) of brain death cases younger than 30 years old could not be obtained for organ donation. We reached family members of 30 subjects among 96 patients. Three of them did not accept the interview. We asked the remaining 27 families why they did not accept organ donation. The most common reason was reported as the religious belief, and the second reason was the violation of physical integrity (29.6% and 18.5%, respectively). The reasons are summerized in Table 2. The other causes clarified by the family members and relatives were that they had doubts about patients' transplantation of donated organs. Although, 40.7% of families reported that they had refused organ donation since their patients was too young, only 18.5% of them told that they would accept organ donation if their patients were older. Among those who rejected organ donation 18.5% expressed that

Table 3. Questionnaire

THE OUESTIONS	YES (%)	NO (%)
1. What was the importance of the deceased person in your life?		
2. Was his/her death a sudden bereavement for your family?	85.1	14.9
3. How did his/her death affect you?		
4. Did he/she talk about organ donation when he/she was alive?	0	100
5. If your answers is no, would you accept organ donation if he/she declared that he/she wanted to donate his/her organs?	62.9	37.1
6. What was the reason for not accepting organ donation?		
7. Did you refuse organ donation since your patient was too young?	40.7	59.3
8. Would you accept organ donation if he/she were older?	18.5	81.5
9. Do you regret not accepting organ donation?	18.5	81.5
10. If asked today, would you accept organ donation?	25.9	74.1

they were regretful about their decision and 25.9% stated that they might accept organ donation though it is asked today. The most striking answer to question why they rejected organ donation was that deceased people did not register their intent to donate their organs when they were healthy or alive. It was declaired by the 62.9% of family members who rejected organ donation that they would have accepted donation if there was testament (Table 3).

Discussion

Declaration of brain death and cadaveric organ donation must be the main targets of organ transplantation programs. While the living donor organ transplantation rate is very low in Western countries, in our country, it is very high. In Spain, 2.58% of all liver transplantations are from living donors (2). This ratio is 4.82% in the United States and 71.6% in Turkey (1, 2). There were a total of 1890 patients on the liver transplantation waiting list in 2015. The number of patients who died while on the waiting list was 523 (27.6%) (1). There were 791 patients on the liver transplantation waiting list in Spain, and 99 (12.5%) of them died while on the waiting list (2). The aforementioned ratios emphasize the importance of amplification of cadaveric donor pool instead of encouraging living donor transplantation, which is accompanied by several medico-legal issues.

By April 2016, the number of patients in Turkey on the waiting list for kidney transplantation was 22575, for heart 676, liver 2252, lung 49, pancreas 271, and cornea 2647. While 3500-4000 new patients are being added to this list annually, 2000 patients die while still on the waiting list (1). The most important problem in our country is the organ shortage, which is mainly the consequence of insufficent cadaveric organ donation. While the number of cadaveric donors pmp in European countries was reported to range between 15 and 25 in 2012, in our country, it was only 4.9 (1, 2). Although this ratio reached 5.4 in 2013, 5.7 in 2014, and 6 in 2015, it is still not high enough. Cadaveric organ donation in Turkey is the highest in our region, and it was reported to be almost 20 pmp in 2016 (1). However, among the young brain death cases, organ donation is not as high as it is expected to be. The underlying reason for this situation may be that deaths occurring at the young age usually cause much more emotional turmoil in the families of deceased people.

There are two approaches: the opt-out and opt-in system for cadaveric organ donation. The opt-in system requires individual's registration for organ donation prior to death. In contrast, the opt-out system accepts each individual as a potential donor for organ transplantation unless he or she chose not to donate his or her organs (3) The opt-out system was reported to provide a remarkable increase in cadaveric organ donation in several European countries such as Spain, Italy, Austria, and Belgium (4). On the other hand, in our country, the consent for organ donation is taken from family members of deceased individuals regardless of his or her registration for organ donation, even if he or she had a donor card. In this case, it was observed that the decision of family members about organ donation was likely to be affected by religious, legal, and cultural factors. In contrast to the study by Bilgel et al. (5), we found that religious issues were the most important underlying reason for refusal of cadaveric organ donation. However, this finding may be controversial because of a limited number of study participants. In our study, we observed that the only factor affecting the decision by the family was determined to be individual's testament about organ donation.

By the end of 2016, the total number of patients on the waiting list was 28470 in Turkey (1). The goal should be to increase the number of voluntary organ donations by improving social awareness and sensitivity about the subject. In this study, we found that one of the most common reasons for refusing organ donation was religious in nature. For that reason, it is important to tell people that organ donation represents a unique opportunity to help other people. Also, it should be reminded that "whoever saves one, it is as if he had saved mankind entirely," as it is stated in Qur'an (6).

Another point that should be considered in order to increase organ donation is that family members should be convinced that their patient is adequately and effectively treated until that time, and if they do accept organ donation, donated organs should be distributed fairly. The main goal is to increase the donor pool, and for that purpose, decreasing families' refusal and increasing the brain death diagnosis are crucial. Determining local, moral, cultural, and religious obstacles that prevent an increasing the rate of organ donation and the construction of optimal policies about these issues are mandatory.

Conclusion

One of the most important factors affecting the decision of families in a positive way is the declaration of individuals about organ donation prior to death. Therefore, providing social awareness and sensitivity about the subject is crucial. In addition, shifting to opt-out system as a legal strategy, which means that a deceased person is a potential donor in the absence of his or her obvious declaration of being against organ donation, will render family decision unnecessary and consequently increase the rate of cadaveric organ donation. Since religious issues are reported to be the most common reason for the refusal of organ donation, professional theologists who would encourage people to donate organs and inform them about the holiness of saving one's life in all divine religions are required. In this context, it should be highlighted that organ donation is a unique and unrequited expression of our humanity.

Ethics Committee Approval: Detailed information about the study was provided to the participates and a written informed consent was obtained from each one. The study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical committee approval was not obtained because our study was performed only on phone Survey.

Informed Consent: Written and verbal informed consent was obtained from patients who participated in this study.

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