Kidney Transplantation Outcomes in Temporarily Protected Syrian Patients With End-Stage Renal Failure in Turkey

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ABSTRACT

Background. Approximately 6.3 million Syrian people migrated to other countries due to war since 2011. There are more than 3.5 million Syrian people living in Turkey under temporary protection. Syrian people receive free health care in Turkey, including kidney transplantation. Our institution started a kidney transplantation program about 3 years ago. It is the first institution performing living, related kidney transplantation for Syrian patients with end-stage renal failure.

Methods. All living, related kidney transplantations to Turkish and Syrian patients from the beginning of our transplantation program until September 2018 were enrolled in this study. Donor and recipient characteristics, induction and maintenance immunosuppression, length of hospital stay, creatinine values at first week and first month, treatment incompatibility, and graft survival were evaluated.

Results. Of the 25 living, related kidney transplantations 20% were Syrian. Three of 5 Syrian recipients were in the pediatric age group. None of the Syrian transplantations were preemptive, while half of the Turkish transplantations were preemptive ($P = .005$). Immunosuppression protocols, creatinine values, length of hospital stay, and graft survival rates were similar between groups. None of the Syrian recipients had treatment incompatibility (0%), unlike the Turkish recipients (15%).

Conclusion. Outcomes of kidney transplantation for Syrian recipients are similar to those of Turkish recipients. Having this no-cost facility is great for Syrian kidney failure patients. The number of transplantations for Syrian patients under temporary protection in Turkey is expected to increase in the future, with these favorable results and easy to access, free health care facilities.

THE SYRIAN civil war started on March 11, 2011. The first migration from Syria to Turkey began on April 29, 2011. Although they are called "refugees" most of the time, it seems that this term is a misnomer when their status is looked at closely [1]. Syrian people are under "temporary protection" in Turkey. This term is not the same as "refugee". The Turkish government accepts the term "refugee" only for migrations from Europe, which is not the case for Syrian people [2].

There are approximately 25.4 million refugees in the world; one quarter of them (6.3 million) are Syrian [3]. Turkey is the at the top of the refugee-hosting countries list. According to the Republic of Turkey Ministry of Interior Directorate, General of Migration Management

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data by 2018, there are 3,577,752 Syrian people in Turkey, 560,881 of them are in Istanbul [4]. This number accounts for 3.7% of Istanbul's total population, which is the biggest city in Turkey. The last data regarding the prevalence of end-stage renal disease treated by hemodialysis in Syria are about 226 patients per million people [5]. This means that there may be approximately 800 people under dialysis in Turkey.

Syrian people receive free health care in all government hospitals. Under temporary protection, they or their relatives cannot donate their organs, even if brain death occurs. They may only have a living, related kidney transplantation.

The first kidney transplantation in Turkey was done on November 3, 1975 [6]. There are more than 30 centers performing kidney transplantations in Istanbul. The number of centers with kidney transplantation programs was 72 by the year 2016 [7]. Our transplantation clinic performed its first kidney transplantation on September 30, 2015 [8]. Our clinic can be regarded as "new" when present conditions are considered.

The first kidney transplantation from a Syrian donor to a Syrian recipient was performed in our hospital on June 21, 2016 [9]. This was also the first case in our country. It was done despite some bureaucratic difficulties. All tests we can perform on Turkish patients can be done on Syrian patients as well. We can also do invasive procedures, like transplant kidney biopsy and reoperations due to complications, without any difficulty. We also can provide all drugs needed during the follow-up period, like rituximab. There are some additional regulations for Syrian patients, to prevent illegal organ traffic. All Syrian donor and recipient candidates must have an official identity card supplied by the Turkish Government. They must have an official document proving their relationship to each other. After fulfilling these criteria, all candidates' files must be approved by the ethics committee held by the Governorship of Istanbul.

Unintended migration to another country has many social difficulties. Renal replacement therapies require continued care, even in the case of war. Increased obstacles are an expected result in Syrian patients with a medical comorbidity. There are few publications related to the Syrian people and these only focus on their psychiatric problems [10–12]. There is no published data regarding incidence or prevalence of end-stage renal disease (ESRD), hemodialysis, or transplantation for Syrian patients in Turkey. Little is known about Syrian patients with ESRD in other countries as well [13]. The aim of this study is to compare donors' and recipients' details and graft survival rates between Turkish and Syrian kidney transplant patients.

METHODS

All living, related kidney transplantations from September 30, 2015 until September 01, 2018 were enrolled in the study. Nationalities other than Turkish and Syrian people were excluded. Data were compared between Turkish and Syrian patients.

Donor characteristics including age, sex, relationship with the recipient, and body mass indices were recorded from the donors' hospital records. Details about recipients, for example, age, sex, body mass indices, dialysis history, length of hospital stay, induction and maintenance immunosuppression details, creatinine values at first week and first month, communication method (via interpreter), presence of treatment incompatibility, and graft survival rates were noted. Treatment incompatibility was defined as failure to adhere to medicines and/or taking medicines in different dosages than planned or by mistake.

Ethical approval was not needed due to the retrospective design of the study.

Due to the limited number of patients, all data were accepted as distributed abnormally. Continuous variables were given as median (interquartile range). Comparisons of categorical variables were done with the χ^2 test. Comparisons of continuous variables were done with the Mann-Whitney U test. Graft survival was calculated with Kaplan-Meier analysis. P value was accepted as significant if less than .05. SPSS 21 (IBM, Armonk, NY, United States) was used for statistical analysis.

RESULTS

All patients were enrolled in the study, except for 1 patient who was from Kazakhstan. There were 25 living, related kidney transplantations, of whom 20% were Syrian. Donor characteristics were similar between the 2 groups (Table 1). The median age of Syrian recipients was 17 (13–23.5) years; whereas, it was 34 (21.25–46.5) years in the Turkish recipients ($P = .035$). Body mass indices were 17.08 ± 2.31 kg/m^2 and 23.6 ± 6.2 kg/m^2 in Syrian and Turkish recipients, respectively ($P = .019$). Half of the transplantations were preemptive in the Turkish patients, while none of them was preemptive in the Syrian patients ($P = .005$). Only 40% of the Syrian patients needed an interpreter to communicate with the health care professionals ($P = .003$).

All patients had anti-thymocyte globulin for the induction of immunosuppression and continued triple immunosuppression with tacrolimus, mycophenolate mofetil, and prednisolone. The length of hospital stay and the first week and first month creatinine levels were similar between the 2 groups (Table 1). There was no treatment incompatibility in the Syrian recipients; whereas, 15% of Turkish recipients used tacrolimus at different dosages than prescribed until the next outpatient control. Graft survival rates were similar between the Turkish and Syrian recipients (log rank $P = .57$) (Fig 1).

DISCUSSION

This study summarizes the kidney transplantation experience with Syrian patients in Turkey, in which graft survival rates were similar between groups.

The donor characteristics were similar between the 2 groups. The recipients' median age was younger in the Syrian group, because the recipients were in the pediatric age group in 3 of 5 transplantations. This was also the cause of lower body mass indices in this group. None of the Syrian patients had preemptive transplantation. The first

Table 1. Details of Demographic Characteristics and Follow-up Details of Syrian and Turkish Transplantations

	Total	Syrian	Turkish	*P*
Number	25	5	20	
Donor age (y), median (IQR)	46 (42.5–57.5)	44 (35–46.5)	48.5 (43.25–58.75)	.133
Donor sex				
Female (%)	40	20	45	
Donor BMI (kg/m^2), median (IQR)	27.6 (24.1–29.9)	27.4 (23.4–29)	27.8 (24–31.2)	.644
Relation of donor with recipient (%),				.337
Father	32	80	20	
Mother	20	-	25	
Sibling	20	20	20	
Other	28	-	35	
Recipient age (y), median (IQR)	26 (17–44)	17 (13–23.5)	34 (21.2–46.5)	.035
Recipient sex, female (%)	32	40	40	
Recipient BMI (kg/m^2), median (IQR)	21.7 (17.2–26.2)	17.08 ± 2.31	23.6 ± 6.2	.019
Dialysis history, positive (%)	60	100	50	.005
Communication, via interpreter	8	40	-	.003
Length of hospital stay (d), median (IQR)	14 (9.5–20)	14 (8–24.5)	13.5 (10–20.5)	.759
First wk creatinine (mg/dL), median (IQR)	1.2 (0.9–1.5)	1.0 (0.9–2.6)	1.2 (1–1.4)	.973
First mo creatinine, median (IQR)	1.2 (0.98–1.5)	1.2 (0.9–1.4)	1.3 (1–1.5)	.546
Treatment incompatibility, positive (%)	12	-	15	.356

Abbreviations: BMI, body mass index; IQR, interquartile range.

transplantation in Turkey to Syrian patients was performed in our hospital, which means that all end-stage renal failure patients had dialysis before. As the number of centers performing kidney transplants for Syrian patients in Turkey increases, awareness of this opportunity will increase. There will also be preemptive transplantations in this group in the future.

Although some of the Syrian patients needed a translator, none of them had treatment incompatibility. This seems to be an unexpected finding, but it has several possible explanations. As they sought transplantation in Turkey, we may assume that they adapted well to Turkey and were aware of the renal transplantation procedure. They also were brave and smart enough to be pioneers of kidney transplantation for a temporarily protected patient in Turkey. Their willingness for transplantation might have continued into the post-transplantation period, increasing the patient's adherence to treatment. In addition, they might have paid more attention to the drug dosages than the Turkish patients, to ensure they had not misunderstood the instructions.

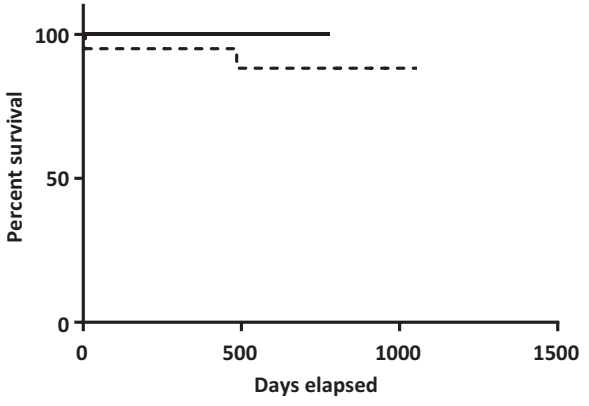

Fig 1. Comparison of graft survival between Turkish and Syrian recipients. Dashed line represents Turkish recipients. Solid line represents Syrian recipients. Graft survivals were not statistically different ($P = .57$).

Isreb et al investigated the details of Syrian hemodialysis patients in Jordan in 2015 [13]. They found that 89% of patients were unable to get medications consistently. Hemoglobin levels were less than 10 gr/dL in 68% of the patients. In addition to easy and free access to medicines and medical care, providing the opportunity of a kidney transplant to a refugee or temporarily protected patient is extraordinary. This can be attributed as the most valuable credit going to our country.

Creatinine values at first week and first month and graft survival rates were similar in each of patients. Transplantation to people under temporary protection has yielded results similar to those of Turkish people. These statistics might be biased by the small number of patients studied. Apart from the numbers, the value of providing transplants to these patients in Turkey, giving this opportunity to people who do not have any insurance or power to pay for anything, is more important than any statistical number. This is the first study issuing results for Syrian ESRD patients in another country.

CONCLUSION

Kidney transplantation is possible for Syrian patients with ESRD. The results are reasonable when compared to Turkish transplantation patients. The number of Syrian ESRD patients undergoing transplants will increase in the near future in Turkey, because health care facilities are easily accessible and treatment is totally free.

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