

# Survival of Rehospitalized Kidney Allograft Recipients

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**Introduction.** Undergoing transplantation is extremely stressful, and a recipient is likely leave the hospital burdened with fears of an uncertain future. A paucity of knowledge on the long-term survival of rehospitalized kidney transplant recipients is the likely the reason that physicians fail to provide this group of patients with promising information and reassurance about their future. We sought to describe the long-term patient and graft survival after nonfatal rehospitalization in kidney recipients with a normal graft function after discharge.

**Materials and Methods.** We reviewed the follow-up data (from the time of discharge after first rehospitalization) of 253 kidney transplant recipients who had been discharged from rehospitalization with a normal kidney function (serum creatinine less than 1.6 mg/dL). Patient and graft survival rates 6 months and 1, 2, and 5 years after discharge were determined.

**Results.** The mean duration of follow-up (from the time of discharge after the first rehospitalization) was  $38.9 \pm 11.2$  months (range, 6 to 84 months). The overall patient survival rates were 98%, 97%, 95%, and 93% at 6 months, 1 year, 2 years, and 5 years, respectively. Graft survival rates at these times were 88%, 82%, 77%, and 63%, respectively. After the first posttransplant rehospitalization, 54 patients (21.9%) experienced more hospitalization episodes (mean,  $2.6 \pm 2.0$  times), while 193 (78.1%) had no further hospitalizations during the follow-up period.

**Conclusion.** Kidney transplant recipients who are rehospitalized should be reassured about favorable chances of survival if discharged with a normal graft function.

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## INTRODUCTION

It is believed that the stress patients with end-stage renal disease (ESRD) have to endure by undergoing kidney transplantation is even greater than that when they are on hemodialysis.<sup>1</sup> A kidney allograft recipient lives in constant fear of organ rejection,<sup>2</sup> which can lead to psychological problems or even suicide.<sup>3</sup> Posttransplant rehospitalization can often raise the stress levels of even patients who had eventually been discharged with fully functioning kidneys, weighing them down with

added uncertainties and fears and diminishing the social functioning and role-emotional functioning domains of their quality of life.<sup>4,5</sup>

We should point up factors that can assuage a kidney transplant patient's fears after a successful transplantation, the most important of which being the recipient's positive attitude by receiving appropriate information.<sup>6</sup> It is necessary to furnish physicians who concern about their patients' feelings with documented survival evidence by describing long-term patient and graft survival

after rehospitalization. Believing that there is a dearth of discussions brought about by the medical community in determining and publishing data on the survival rates of rehospitalized kidney transplant recipients, we found it unethical to leave many a patients bereft of hope. Thus, we aimed to determine the patients and graft survival rates in kidney allograft recipients with a history of posttransplant rehospitalization.

## MATERIALS AND METHODS

We reviewed the hospital and clinic records of kidney transplant recipients of Baqiyatallah Medical Center in Tehran, Iran. Of a total of 382 kidney transplant recipients who were rehospitalized for the first time between 2000 and 2003, there were 253 patients discharged with a normal kidney function. We analyzed their survival rates and excluded the rest of the recipients (33.8%) from the survival analysis. It should be noted that our hospital, the rate of at least 1 episode hospitalization after transplantation was 71%.

Our immunosuppressive treatment protocol contained mycophenolate mofetil, cyclosporine, and prednisone. Normal allograft function after discharge was defined as a serum creatinine level less than 1.6 mg/dL.<sup>7</sup> Patient and graft survival rates at 6 months and 1, 2, and 5 years after rehospitalization discharge were calculated by the Kaplan-Meier method. Graft survival was analyzed as non-death-censored. As the time interval between transplantation and first rehospitalization was not normally distributed, we used median and interquartile range for its description.

## RESULTS

The patients consisted of 176 men (69.6%) and 77 women (30.4%) at a mean age of  $40.3 \pm 9.3$  years (range, 12 to 73 years) at transplantation time. The kidney allografts had been provided by 206 living unrelated donors (81.4%), 26 living related donors (10.3%), and 21 cadaveric donors (8.3%). The median interval between transplantation and the first rehospitalization was 6 months (interquartile range, 5 months). The causes of rehospitalization were infection in 121 patients (47.8%), graft rejection in 104 (41.1%), surgical complications in 15 (5.9%), drug complications in 13 (5.1%), urinary calculus in 10 (3.9%), cancer in 3 (1.2%), cardiovascular disease in 1 (0.4%), and others in 15 (5.9%).

The mean duration of follow-up (from the time of discharge after the first rehospitalization) was  $38.9 \pm 11.2$  months (range, 6 to 84 months). The overall patient survival rates were 98%, 97%, 95%, and 93% at 6 months, 1 year, 2 years, and 5 years, respectively. Graft survival rates at these times were 88%, 82%, 77%, and 63%, respectively. After the first posttransplant rehospitalization, 54 patients (21.9%) experienced more hospitalization episodes (mean,  $2.6 \pm 2.0$  times), while 193 (78.1%) had no further hospitalizations during the follow-up period. The mean duration from the first rehospitalization to the second one was  $11.2 \pm 19.9$  months (range, 1 to 48 months).

## DISCUSSION

Our survival study on kidney transplant recipients who had functioning allografts after being discharged from their first rehospitalization showed promising results; the 2- and 5-year patient survival rates were 95% and 93%, respectively. These rates for graft survival were 77% and 63%, respectively. These survival rates seem to be acceptable for both patients and grafts. The low frequency of kidney transplant recipients without any rehospitalization precluded assigning a control group. It is noteworthy that the low rate of recipients with no rehospitalization was borne out by Neylan and colleagues' study.<sup>8</sup> Comparing the above rates, albeit not statistically, with those of the nationwide reports on the overall kidney transplant recipients within the same period shows a acceptable post-first-rehospitalization survival. In Iran, the 3- and 5-year patient survival rates are about 95% and 75%, respectively, and the 5-year graft survival rate is over 50%.<sup>9,10</sup> Therefore, we believe that physicians should inform rehospitalized kidney transplant patients of their potentially good survival probability. This possibly may decrease the very strong fear after rehospitalizations. It seems that currently, most physicians do not reassure their patients, maybe because of lack of published survival rates after discharge.

To our knowledge, this is the first study to focus on the outcome of kidney transplant recipients after rehospitalization discharge. Further promising news comes from some other studies reporting that the survival rates in kidney transplant recipients after complete recovery following antirejection therapy are not significantly different from those without acute rejection episodes.<sup>11,12</sup>

What further underscores the importance of improving a patient's outlook on his or her future is the evidence suggesting that, contrary to the notion that kidney transplantation improves the recipient's mental status,<sup>13</sup> there can be tougher posttransplant psychological challenges such as depression, anxiety, suicidal behavior, and dissociative identity disorder.<sup>1,14-18</sup> The contributors to a kidney recipient's fear are high costs of treatment, use of immunosuppressants with direct (side effects) and indirect (excessive costs) impacts, mood changes, irritability, feelings of inferiority due to the use of steroids in the early posttransplant stages, physical complications triggered by steroid use (acne, Cushingoid face, and bulging stomach) or cyclosporine treatment (hirsutism, tremor, and gingival hyperplasia), change in body image, and loss of identity. Nonetheless, the largest contributor to a kidney transplant recipient's fear of an uncertain future is concerns about organ rejection and infection.<sup>19</sup> Appropriate measures should be taken to dispel uneasiness when readmission occurs, since more than 50% of kidney transplant recipients experience rehospitalization during the first posttransplant year.<sup>8</sup> Such measures should by no means be limited to the realm of kidney transplantation. Indeed, it is wrong to assume that the mental status of any patient hospitalized for any medical reason drastically improves after discharge.<sup>20,21</sup> In contrast, rehospitalization is likely to exacerbate fears and reduces the quality of life.<sup>22-25</sup> For many kidney transplant recipients, rehospitalization ushers in more grief and discouragement as they view it as the harbinger of doom.<sup>26</sup> Fortunately, the story is not all doom and gloom; it has been reported that offering patients encouragement and hope about their future can relieve their worries,<sup>27-29</sup> and the results of our study show that kidney transplant recipients can enjoy an acceptable survival probability after recovery. Steps, therefore, should be taken towards dismissing unfounded fears even refractory ones.<sup>30,31</sup>

In the interpretation of the discussion presented here, 2 points should be noticed. Firstly, in this study, first rehospitalizations with a wide range of causes and post transplant time interval were included. The cause of hospitalization is a main factor affecting inpatient outcome (the outcome of rehospitalization itself and not the survival of the patient thereafter).<sup>32,33</sup> Here we described postdischarge survival of those

who recovered and had functioning kidney allografts. Nonetheless, we did not consider several factors of the patients and transplantation and hospitalizations affecting transplantation outcome.<sup>34-38</sup> Secondly, although most researchers evaluate the survival rates from transplantation itself (because their question is the survival after transplantation), since we questioned the survival after being discharged, we preferred a follow-up period from the time after being discharged.

## CONCLUSIONS

Our study aimed to present the medical community with promising evidence that rehospitalized kidney transplant recipients seem to have an acceptable patient and graft survival if discharged with a normal allograft function. We hope that our results will encourage physicians to reassure this set of patients regarding the good prognosis despite hospitalization. However, it should be noted that this finding is regardless of the reason for hospitalization, and physicians have to consider the severity of the disease.

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## CONFLICT OF INTEREST

None declared.

## REFERENCES

1. Fukunishi I. Anxiety associated with kidney transplantation. *Psychopathology*. 1993;26:24-8.
2. Baines LS, Joseph JT, Jindal RM. Emotional issues after kidney transplantation: a prospective psychotherapeutic study. *Clin Transplant*. 2002;16:455-60.
3. Triffaux JM, Demoulin JC, Limet R. ["Take this heart away!": from fear of rejection to post-transplant delirium]. *Rev Med Liege*. 2002;57:389-92. French.
4. Rebollo P, Ortega F, Ortega T, Valdes C, Garcia-Mendoza M, Gomez E. Spanish validation of the "kidney transplant questionnaire": a useful instrument for assessing health related quality of life in kidney transplant patients. *Health Qual Life Outcomes*. 2003;1:56.
5. Fujisawa M, Ichikawa Y, Yoshiya K, et al. Assessment of health-related quality of life in renal transplant and hemodialysis patients using the SF-36 health survey. *Urology*. 2000;56:201-6.
6. Cupples SA, Nolan MT, Augustine SM, Kynoch D. Perceived stressors and coping strategies among heart transplant candidates. *J Transpl Coord*. 1998;8:179-87.

7. Hakemi M, Najafi I, Ganji MR, Khosravi F, Nikbin B. Peripheral blood microchimerism in female renal recipients from male donors. *Transplant Proc.* 2001;33:2852-3.
8. Neylan JF, Sullivan EM, Steinwald B, Goss TF. Assessment of the frequency and costs of posttransplantation hospitalizations in patients receiving tacrolimus versus cyclosporine. *Am J Kidney Dis.* 1998;32:770-7.
9. Ghods AJ. Renal transplantation in Iran. *Nephrol Dial Transplant.* 2002;17:222-8.
10. Fazel I. Renal transplantation from living related and unrelated donors. *Transplant Proc.* 1995;27:2586-7.
11. Wu J, Chen J, Wang Y, et al. Impact of acute rejection episodes on long-term renal allograft survival. *Chin Med J (Engl).* 2003;116:1741-5.
12. Wu JY, Chen JH, Wang YM, et al. [Completely reversed acute rejection episodes do not influence the long-term renal allograft survival]. *Zhonghua Yi Xue Za Zhi.* 2003;83:106-9. Chinese.
13. Kalman TP, Wilson PG, Kalman CM. Psychiatric morbidity in long-term renal transplant recipients and patients undergoing hemodialysis. A comparative study. *JAMA.* 1983;250:55-8.
14. Arapaslan B, Soykan A, Soykan C, Kumbasar H. Cross-sectional assessment of psychiatric disorders in renal transplantation patients in Turkey: a preliminary study. *Transplant Proc.* 2004;36:1419-21.
15. Karaminia R, Tavallai SA, Lorgard-Dezfuli-Nejad M, et al. Anxiety and depression: a comparison between renal transplant recipients and hemodialysis patients. *Transplant Proc.* 2007;39:1082-4.
16. Noohi S, Khaghani-Zadeh M, Javadipour M, et al. Anxiety and depression are correlated with higher morbidity after kidney transplantation. *Transplant Proc.* 2007;39:1074-8.
17. Soykan A, Arapaslan B, Kumbasar H. Suicidal behavior, satisfaction with life, and perceived social support in end-stage renal disease. *Transplant Proc.* 2003;35:1290-1.
18. Fukunishi I, Ogino M, Suzuki J, et al. Kidney transplantation and liaison psychiatry, part II: A case of dissociative identity disorder. *Psychiatry Clin Neurosci.* 1997;51:305-8.
19. Hamilton D. Kidney transplantation: a history. In: Morris PJ, editor. *Kidney transplantation, principles and practice.* 5th ed. Philadelphia: WB Saunders; 2001. p. 1.
20. Nicklin WM. Postdischarge concerns of cardiac patients as presented via a telephone callback system. *Heart Lung.* 1986;15:268-72.
21. Wu CY. Assessment of postdischarge concerns of coronary artery bypass graft patients. *J Cardiovasc Nurs.* 1995;10:1-7.
22. Li H. Identifying family care process themes in caring for their hospitalized elders. *Appl Nurs Res.* 2005;18:97-101.
23. Li H, Stewart BJ, Imle MA, Archbold PG, Felver L. Families and hospitalized elders: A typology of family care actions. *Res Nurs Health.* 2000;23:3-16.
24. Li H. Hospitalized elders and family caregivers: a typology of family worry. *J Clin Nurs.* 2005;14:3-8.
25. Wu HY, Sahadevan S, Ding YY. Factors associated with functional decline of hospitalised older persons following discharge from an acute geriatric unit. *Ann Acad Med Singapore.* 2006;35:17-23.
26. Eisendrath RM. The role of grief and fear in the death of kidney transplant patients. *Am J Psychiatry.* 1969;126:381-7.
27. Donovan JL, Blake DR. Qualitative study of interpretation of reassurance among patients attending rheumatology clinics: "just a touch of arthritis, doctor?" *BMJ.* 2000;320:541-4.
28. Grogan E, Frank A, Keat A. Patients in rheumatology clinics need reassurance. *BMJ.* 2000;321:300.
29. Fitzpatrick R. Telling patients there is nothing wrong. *Bmj.* 1996;313:311-2.
30. McDonald IG, Daly J, Jelinek VM, Panetta F, Gutman JM. Opening Pandora's box: the unpredictability of reassurance by a normal test result. *BMJ.* 1996;313:329-32.
31. Fitzpatrick R, Hopkins A. Referrals to neurologists for headaches not due to structural disease. *J Neurol Neurosurg Psychiatry.* 1981;44:1061-7.
32. Khedmat H, Araghizadeh H, Assari S, Moghani-Lankarani M, Aghanassir M. Which primary diagnosis has the highest in-hospital mortality rate for kidney recipients? *Transplant Proc.* 2007;39:901-3.
33. Nemati E, Pourfarziani V, Jafari AM, et al. Prediction of inpatient survival and graft loss in rehospitalized kidney recipients. *Transplant Proc.* 2007;39:974-7.
34. Ghoddousi K, Ramezani MK, Assari S, et al. Primary kidney disease and post-renal transplantation hospitalization costs. *Transplant Proc.* 2007;39:962-5.
35. Nemati E, Saadat AR, Hashemi M, Khoddami-Vishteh HR, Moghani-Lankarani M. Causes of rehospitalization after renal transplantation; does age of recipient matter? *Transplant Proc.* 2007;39:970-3.
36. Pourfarziani V, Rafati-Shaldehi H, Assari S, et al. Hospitalization databases: a tool for transplantation monitoring. *Transplant Proc.* 2007;39:981-3.
37. Naderi M, Aslani J, Hashemi M, Assari S, Amini M, Pourfarziani V. Prolonged rehospitalizations following renal transplantation: causes, risk factors, and outcomes. *Transplant Proc.* 2007;39:978-80.
38. Ramezani M, Ghoddousi K, Hashemi M, et al. Diabetes as the cause of end-stage renal disease affects the pattern of post kidney transplant rehospitalizations. *Transplant Proc.* 2007;39:966-9.

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