

# Factors Associated With Survival of Kidney Allografts

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Kidney transplantation is generally accepted as the best way for renal replacement therapy in patients with end-stage renal disease.<sup>1-5</sup> Kidney transplant recipients could have a relatively high quality of life compared with maintenance hemodialysis.<sup>6,7</sup> Despite the successful kidney transplant surgeries, rejection rate has still a high percentage in these patients; about 10% of them experience rejection within the first year.<sup>8</sup> Knowing the high rate of complications and risk factors affecting kidney allograft survival, most of which are predictable and preventable, this issue has become increasingly important. Long-term kidney allograft survival has not paralleled improvements made in the past three decades in short-term survival. As mentioned in the literature, factors that may be related to short- and long-term survival are diverse and various.<sup>9</sup> A main question to be answered about outcomes in kidney transplantation is which factors are associated with short- and long-term graft survival. Accumulating evidence supports that some of the accepted risk factors can be prolonged pretransplant dialysis time, pretransplant and posttransplant hypertension, the use of expanded criteria donors, higher serum levels of creatinine at the time of the first discharge, racial and ethnic differences that are related to the level of health services, underlying disease (diabetes mellitus), body mass index, age of recipients, donor type, proteinuria, sex of recipient and donor, and infections.<sup>2-6,10-15</sup>

In the current issue of the *Iranian Journal of Kidney*

*Diseases*, Mirzaee and colleagues present an effective cure model analysis for improve short- and long-term survival rates of kidney allograft. They used a mixture of cure models to assess the short- and long-term survival rate.<sup>16</sup> They concluded that pretransplant hypertension, body mass index, a serum creatinine level of 1.6 mg/dL and greater upon discharge from the hospital, and donor age and sex were the risk factors affecting the survival of the kidney allograft. These time-dependent survival factors could be improved by controlling effective variables. Since the long-term kidney allograft survival remains an elusive goal, many studies are being conducted in this field, in order to help these patients to have a better life.<sup>17-19</sup>

The association of many factors such as female sex, black race, older donor age, deceased donor source, delayed graft function, and acute rejection with the duration of allograft survival formed the basis of study conducted by Gilland colleagues on the relationship between glomerular filtration rate changes and long-term kidney allograft survival.<sup>20</sup> They explained that strategies for improving long-term kidney allograft survival that increase baseline allograft function could be more effective than strategies to slow the decline in glomerular filtration rate.

Donor age is a known risk factor for chronic allograft failure in kidney transplant recipients.<sup>21</sup> For determining the interaction between the donor age and risk of allograft failure, a study was conducted by Meier-Kriesche and colleagues,

evaluating 40 289 adults with kidney transplant.<sup>22</sup> The results showed synergistic deleterious effect of increased age in short- and long-term graft survival rates among the kidney recipients. Some other pretransplant and posttransplant period factors that are currently used as predictors of graft outcome, and most of them are in research process, including dialysis type, human leukocyte antigen matching, serum CD30, serum CXCL10, cold ischemia time, organ size, renal artery resistant index, urinary CXXL10, and acute tubular necrosis.<sup>5, 23-27</sup> Furthermore, the increasing demand for organ transplantation requires immediate optimizing of the survival rate of kidney allografts through identifying malicious and damaging agents. Having these proposed factors in mind can help us to discuss the results reported by Mirzaee and colleagues, some of which are not similar to other findings in this field, such as improvement of graft survival by increasing age of donor and enhanced body mass index (M, 2014 #11).<sup>16</sup> These differences can be partly explained by the small number of samples using in this study. In summary, confirmatory analysis with large databases is necessary to quantify these effects. Transplant centers should follow their patients so closely throughout their lifetime, to make the infrastructures better and create fundamental changes in survival of kidney allografts.

### CONFLICT OF INTEREST

None declared.

### REFERENCES

- Nafar M, Einollahi B, Sharifian M, Firoozan A, Aghighi M. Renal transplantation in Iran. *Transplant Proc.* 2001;33:2649.
- Einollahi B, Hajarizadeh B, Simforoosh N, et al. Patient and graft outcome after living donor renal transplantation in Iran: more than 15-year follow-up. *Transplant Proc.* 2003;35:2605-6.
- Einollahi B. Iranian experience with the non-related renal transplantation. *Saudi J Kidney Dis Transpl.* 2004;15:421-8.
- Einollahi B, Pourfarziani V, Ahmadzad-Asl M, et al. Iranian model of renal allograft transplantation in 3028 recipients: survival and risk factors. *Transplant Proc.* 2007;39:907-10.
- Fattahi MR, Nourbala MH, Rostami Z, Einollahi B. Patient and graft outcomes in deceased-donor kidney transplantation: a good start for a promising future. *Iran J Kidney Dis.* 2012;6:291-4.
- Einollahi B, Heidari F, Einollahi H, Rostami Z. Favorable renal allograft and patient outcome after transplantation in patients with diabetes mellitus: a five-year single center experience. *Nephrourol Mon.* 2011;3:291-5.
- Tayyebi A, Raiesifar A, Najafi Mehri S, Ebadi A, Einollahi B, Pashandi S. Measuring health related quality of life (hrql) in renal transplant patients: psychometric properties and cross-cultural adaptation of kidney transplant questionnaire (ktq-25) in persian. *Nephrourol Mon.* 2012;4:617-21.
- Djamali A, Samaniego M, Muth B, et al. Medical care of kidney transplant recipients after the first posttransplant year. *Clin J Am Soc Nephrol.* 2006;1:623-40.
- Prommool S, Jhangri GS, Cockfield SM, Halloran PF. Time dependency of factors affecting renal allograft survival. *J Am Soc Nephrol.* 2000;11:565-73.
- Einollahi B, Jalalzadeh M, Taheri S, Nafar M, Simforoosh N. Outcome of kidney transplantation in type 1 and type 2 diabetic patients and recipients with posttransplant diabetes mellitus. *Urol J.* 2008;5:248-54.
- Gulleroglu K, Baskin E, Bayrakci U, Akdur A, Moray G, Haberal M. Early proteinuria after renal transplantation and allograft outcomes. *Transplant Proc.* 2014;46:141-4.
- Mirzaee M, Azmandian J, Zeraati H, et al. Patient survival in renal allograft failure: A Time-dependent Analysis. *Nephrourol Mon.* 2014;6:E13589.
- Moghani-Lankarani M, Assari S, Sharifi-Bonab M, Nourbala MH, Einollahi B. Does age of recipient affect outcome of renal transplantation? *Ann Transplant.* 2010;15:21-6.
- Simforoosh N, Basiri A, Fattahi MR, et al. Living unrelated versus living related kidney transplantation: 20 years' experience with 2155 cases. *Transplant Proc.* 2006;38:422-5.
- Wang W, Li XB, Yin H, et al. Factors affecting the long-term renal allograft survival. *Chin Med J (Engl).* 2011;124:1181-4.
- Mirzaee M, Azmandian J, Zeraati H, et al. Short-term and long-term survival of kidney allograft: cure model analysis. *Iran J Kidney Dis.* 2014;8:225-30.
- Gomez EG, Hernandez JP, Lopez FJ, et al. Long-term allograft survival after kidney transplantation. *Transplant Proc.* 2013;45:3599-602.
- Mourad G, Minguet J, Pernin V, et al. Similar patient survival following kidney allograft failure compared with non-transplanted patients. *Kidney Int.* 2014.
- Shin M, Moon HH, Kim JM, et al. Implication of donor-recipient age gradient in the prognosis of graft outcome after deceased-donor kidney transplantation. *Transplant Proc.* 2013;45:2907-13.
- Gill JS, Tonelli M, Mix CH, Pereira BJ. The change in allograft function among long-term kidney transplant recipients. *J Am Soc Nephrol.* 2003;14:1636-42.
- Lim WH, Chang S, Chadban S, et al. Donor-recipient age matching improves years of graft function in deceased-donor kidney transplantation. *Nephrol Dial Transplant.* 2010;25:3082-9.
- Meier-Kriesche HU, Cibrik DM, Ojo AO, et al. Interaction between donor and recipient age in determining the risk of chronic renal allograft failure. *J Am Geriatr Soc.* 2002;50:14-7.



## Commentary

23. Rostami Z, Einollahi B, Ghadiani MH. Does living donor hyperoxia have an impact on kidney graft function after transplantation? *Nephrourol Mon.* 2013;5:835-9.
24. Lachenbruch PA, Rosenberg AS, Bonvini E, Cavaille-Coll MW, Colvin RB. Biomarkers and surrogate endpoints in renal transplantation: present status and considerations for clinical trial design. *Am J Transplant.* 2004;4:451-7.
25. Marsden PA. Predicting outcomes after renal transplantation--new tools and old tools. *N Engl J Med.* 2003;349:182-4.
26. Perl J, Dong J, Rose C, Jassal SV, Gill JS. Is dialysis modality a factor in the survival of patients initiating dialysis after kidney transplant failure? *Perit Dial Int.* 2013;33:618-28.
27. Shooshtarizadeh T, Mohammadali A, Ossareh S, Ataipour Y. Relation between pretransplant serum levels of soluble CD30 and acute rejection during the first 6 months after a kidney transplant. *Exp Clin Transplant.* 2013;11:229-33.

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