

Kidney Transplantation

Kidney Transplantation in Older Adults: Does Age Affect Graft Survival?

Hassan Ahmadnia,* Ali Shamsa, Aliasghar Yarmohammadi, Mohammadreza Darabi,
Mohammad Asl Zare

Department of Urology, Ghaem Hospital, Mashhad University of Medical Sciences, Mashhad, Iran

ABSTRACT

Introduction: There is a paucity of data on long-term patient and graft survival in the older kidney recipients. Our aim was to evaluate the long-term outcomes of kidney transplantation in patients aged 50 years and older and compare them with outcomes in younger recipients.

Materials and Methods: Forty-seven recipients aged 50 years and older and 47 recipients aged younger than 50 years were randomly assigned to two groups (groups 1 and 2, respectively). Patients who had received a cadaveric kidney allograft were excluded from the study. Data including demographic and clinical characteristics, early complications, early mortality, and actuarial patient and graft survival rates were collected, and the two groups were compared, accordingly.

Results: The rates of early complications and mortality were not different between the two groups. Patient survival rates at 1, 3, 5, and 7 years were 72%, 58%, 41%, and 41% for patients in group 1 and 95%, 86%, 86%, and 86% for patients in group 2, respectively ($P = 0.007$). Graft survival rates were 72%, 58%, 41%, and 41% for patients in group 1 and 95%, 85%, 85%, and 85% for patients in group 2, respectively ($P = 0.006$). Graft loss due to patient death was 33.33% in group 1 compared with 4.25% in group 2 ($P < 0.001$).

Conclusion: Kidney transplantation should be considered in patients older than 50 years, since the graft survival rate is acceptable in this population, and early mortality and complications in this group are not different than those of younger recipients. Although older patients have a shorter life expectancy, they benefit from renal transplantation in ways similar to younger kidney transplant recipients.

KEY WORDS: elderly, end-stage renal disease, kidney transplantation, survival

Introduction

Kidney transplantation today is widely known as the best treatment for patients requiring renal replacement therapies.⁽¹⁾ Among the growing population of dialysis-dependent patients, those

aged older than 60 years now account for more than 53% of the population requiring renal replacement therapies.⁽²⁾ Hemodialysis, the most commonly used modality in these patients, is associated with significant morbidity and mortality compared with kidney transplantation.⁽³⁾ It has been shown that kidney transplantation in older patients can be performed safely and successfully.⁽⁴⁾ Therefore, it is not surprising that the demand for donor

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**Corresponding author: 136 Farhang Lane,
Tehran St, Mashhad 91366, Iran.*

Tel: ++98 511 859 5880, Fax: ++98 511 841 7404

E-mail: ahmadnia2001@yahoo.com

organs has been steadily rising.⁽¹⁾ However, little long-term follow-up data exist regarding elderly transplant recipients.⁽²⁾ The purpose of this study was to evaluate graft and patient survival in first-time kidney transplant recipients aged 50 years and older.

Materials and Methods

From November 1983 to September 2004, 485 kidney transplantations were performed in Ghaem Medical Center in Mashhad, Iran. In this historical cohort study, 47 recipients aged 50 years and older (group 1) and 47 recipients aged younger than 50 years (group 2) were randomly selected. The preoperative management was similar in both groups. Patient evaluation before admission was standardized and included a medical history, physical examination, routine biochemical and hematological studies, blood grouping, white blood cell cross-match, viral studies (hepatitis B, hepatitis C, cytomegalovirus, and human immunodeficiency virus), electrocardiogram, and chest-radiograph. Additional tests such as echocardiography, exercise test, and angiography were performed if a history of ischemic heart disease with or without diabetes mellitus or hypertension were present. All transplants were performed at a single center. Patients who had received cadaver kidney allografts were excluded from the analysis. Standard initial immunosuppressive therapy consisted of cyclosporine, prednisolone, and azathioprine. Postoperative management and follow-up were done by the same team. Data including demographic and clinical characteristics, serum creatinine levels, systolic and diastolic blood pressures before and after transplantation, early complications (wound infection, bleeding, urinary leak, and arterial and venous thromboses), early mortality (within 1 postoperative week), and actuarial patient and graft survival rates were collected, and the two groups were compared, accordingly.

Data analyses were performed using SPSS software (Statistical Package for the Social Sciences, version 11.5, SSPS Inc, Chicago, Ill, USA), with a chi-square test, Student *t* test, and Fisher exact test, as appropriate. Also, Kaplan-Meier method and log-rank test were used for survival analyses. Graft loss (death-censored) was considered the graft survival endpoint. Values for *P* less than 0.05 were considered statistically significant.

Results

In group 1, 2 patients were excluded because their data were incomplete. The mean ages for patients in groups 1 and 2 were 53.93 ± 3.67 years and 25.23 ± 6.76 years, respectively. Both groups had similar sex ratios (13 women in each group). The mortality rate within the first week was 6.7% in group 1 (3 patients) and 2.1% in group 2 (1 patient) ($P = 0.28$). Early complications were seen in 7 patients (15.6%) in group 1 and in 7 patients (14.9%) in group 2 ($P = 0.93$). The number of living-donor kidney recipients in groups 1 and 2 were 23 (51.1%) and 40 (85.1%), respectively ($P < 0.001$). There were no between-group differences regarding the patients' systolic and diastolic blood pressures, either before or after the procedure (pretransplant, $P = 0.58$, $P = 0.7$; posttransplant, $P = 0.34$, $P = 0.1$, respectively). The mean serum creatinine levels for patients in groups 1 and 2 before the operation were 5.21 ± 1.63 mg/dL and 4.87 ± 1.32 mg/dL, respectively ($P = 0.27$). The mean serum creatinine levels at the time of discharge from the hospital were 1.96 ± 1.39 mg/dL and 1.86 ± 0.99 mg/dL ($P = 0.7$) for patients in groups 1 and 2, respectively. Patient survival rates at 1, 3, 5, and 7 years were 72%, 58%, 41%, and 41% in group 1 versus 95%, 86%, 86%, and 86% in group 2 ($P = 0.007$). The two main causes of death for patients in group 1 were related to cardiovascular events and infections. Graft survival rates at 1, 3, 5, and 7 years were 72%, 58%, 41%, and 41% for patients in group 1 versus 95%, 85%, 85%, and 85% for patients in group 2 ($P = 0.006$). Graft loss due to patient death was 33.33% in group 1 compared with 4.25% in group 2 ($P < 0.001$).

Discussion

The purpose of renal replacement therapy is to prolong and maintain the quality of life for patients with end-stage renal disease (ESRD) in whom the risks of undergoing transplantation is equal to or less than that of remaining on dialysis. Kidney transplantation is the preferred method of therapy for most patients with ESRD because it is more cost-effective,⁽⁵⁾ and it allows return to a more-normal lifestyle than does maintenance dialysis therapy.⁽⁶⁾

Advanced age is often assumed to be a contraindication to kidney transplantation based on the fact that older patients may respond badly

to immunosuppression, may be at risk from anesthesia and surgery, and may be particularly prone to posttransplant complications. Prior to the 1980s (the earlier years of kidney transplantation), it was reasonable to have such a negative attitude.⁽⁷⁾ From 1981 on, however, there have been several reports of acceptable results of cadaveric kidney transplantation in older patients. Lauffer and colleagues studied on 507 patients, of whom 63 (12.4 per cent) were over 55 years old at the time of operation, received first cadaver renal transplants. Despite serious complications, actuarial graft survival for the population over 55 years of age was no worse than for those patients receiving first cadaver grafts who were under 55 years old, although patient survival was poorer in the former group ($P = 0.027$).⁽⁷⁾

When analyzing mortality in older transplant recipients, the key question is to compare the risk of death with that seen in patients on long-term dialysis treatment. A study based on proportional hazard methodology for unequal group analysis on 389 patients treated for ESRD was performed in the United Kingdom, between 1974 and 1985. The authors concluded that no meaningful differences were noted between the relative risk of death for patients on continuous ambulatory peritoneal dialysis, those on hemodialysis, and those who had received a kidney transplant.⁽⁸⁾

In several reports, it has been shown that the mortality rate in elderly patients is not significantly different from that observed in younger recipients. Hestin et al reported no statistically significant differences in 3-year graft survival rates between the older and younger groups in their study. It is interesting to note that in that study, death or nephrectomy represented the exclusive cause of graft loss in elderly patients, whereas chronic rejection was the main cause of graft loss in younger recipients.⁽⁹⁾ Although we found a significant difference in graft survival rates between recipients 50 years of age and older (group 1) and those under 50 years of age (group 2) in the current study, this was due to more deaths in group 1; in group 1, 33.33% of graft losses were due to death, compared with 4.25% in group 2.

Many centers, including ours, remain reluctant to accept older patients on kidney transplantation lists owing to their shorter life expectancies. We hope, however, that our results, as well as those

from other researchers, may convince more centers that age is not a contraindication to kidney transplantation.⁽²⁾ We should be able to increase the number of kidney transplantations performed in patients older than 50 years by considering every patient older than 50 years as a potential recipient. Their survival rates can be improved by careful selection and thorough assessment of cardiac and infection risks, as well as tailored immunosuppression.⁽²⁾

Conclusion

Kidney transplantation should be considered in patients aged older than 50 years, since graft survival in this population is excellent, and early mortality and complication rates in this group are no different than those of younger persons. Although these patients have a shorter life expectancy, they benefit from kidney transplantation in ways similar to younger kidney transplant recipients.

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References

1. Saudan P, Berney T, Goumaz C, Morel P, Martin PY. Renal transplantation with donors aged over 50: a long-term, single centre experience. *Swiss Med Wkly.* 2001;131:117-21.
2. Saudan P, Berney T, Leski M, Morel P, Bolle JF, Martin PY. Renal transplantation in the elderly: a long-term, single-centre experience. *Nephrol Dial Transplant.* 2001;16:824-8.
3. Wolfe RA, Ashby VB, Milford EL, et al. Comparison of mortality in all patients on dialysis, patients on dialysis awaiting transplantation, and recipients of a first cadaveric transplant. *N Engl J Med.* 1999;341:1725-30.
4. Lufft V, Kliem V, Tusch G, Dannenberg B, Brunkhorst R. Renal transplantation in older adults: is graft survival affected by age? A case control study. *Transplantation.* 2000;69:790-4.
5. Evans RW, Kitzmann DJ. An economic analysis of kidney transplantation. *Surg Clin North Am.* 1998;78:149-74.
6. Dew MA, Switzer GE, Goycoolea JM, et al. Does transplantation produce quality of life benefits? A quantitative analysis of the literature. *Transplantation.* 1997;64:1261-73.
7. Lauffer G, Murie JA, Gray D, Ting A, Morris PJ. Renal

- transplantation in patients over 55 years old. *Br J Surg*. 1988;75:984-7.
8. Burton PR, Walls J. Selection-adjusted comparison of life-expectancy of patients on continuous ambulatory peritoneal dialysis, haemodialysis, and renal transplantation. *Lancet*. 1987;1:1115-9.
9. Hestin D, Frimat L, Hubert J, Renoult E, Huu TC, Kessler M. Renal transplantation in patients over sixty years of age. *Clin Nephrol*. 1994;42:232-6.

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