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Comparison of the Clinical Characteristics of Renal Transplant Recipients Who Underwent Early Versus Late Graft Nephrectomy

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ABSTRACT

Background. Graft nephrectomy is the last-resort option for renal transplant recipients. The aim of this study was to compare the clinical characteristics of patients who underwent graft nephrectomy according to the time after renal transplantation.

Methods. From 2005 to 2012, 42 patients underwent graft nephrectomy after transplant failure. We divided these patients into early (n = 17) and late graft nephrectomy (n = 25) groups based on graft survival to 6 months, comparing their causes for nephrectomy and clinical characteristics.

Results. The patients included 29 men and 13 women, with an overall mean age of 45 years (range, 10–71 years). The main causes for early and late graft nephrectomy were irreversible acute rejection (71%) and graft intolerance syndrome (95%), respectively. The clinical characteristics did not significantly differ between the early and late graft nephrectomy groups except for operative-related complications. Bleeding was more common among patients who underwent early (n = 10) versus late (n = 3) graft nephrectomy (59% vs 12%; $P = .01$). Of the 10 patients with perioperative bleeding, 8 had a bleeding tendency, such as low platelet count or prolonged prothrombin time at the time of the operation. These complications occurred after antirejection therapy involving plasma exchange or antithymocyte globulin treatment. Allograft nephrectomy was associated with a mortality rate of 2.38%.

Conclusions. The cause for graft nephrectomy and type of perioperative complication differed according to timing of graft nephrectomy. Antirejection therapy appeared to contribute to postoperative complications such as bleeding.

RENAL TRANSPLANTATION has become the replacement therapy of choice for individuals with end-stage renal disease.[1] The increased number of renal transplantations being performed has also increased the number of allograft failures.[2] The risk for and mechanism of graft failure after kidney transplantation may differ according to the time after transplantation.[3]

Graft nephrectomy is the final life-saving option for renal transplant recipients after graft failure. Indications for early graft nephrectomy are inreversible acute rejection, technical problems, and a nonfunctioning graft, whereas the indication for late nephrectomy is graft intolerance syndrome.[4,5] Perioperative complications are reported to differ according to timing of graft nephrectomy.[6] However, only a few studies have evaluated the clinical characteristics of according to the timing of recipients graft nephrectomy after renal transplantation. Therefore, we compared the clinical characteristics of individuals who underwent graft nephrectomy according to the time after renal transplantation.

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Table 1. Baseline Characteristics of the Patients Who Underwent Graft Nephrectomy (n = 42)

Age, y	45 ± 13
Male, n (%)	29 (69)
Graft survival, mo	24 ± 40
Deceased donor, n (%)	18 (43)
Dialysis duration before RT	58 ± 69
Dialysis modality before RT (HD:PD:Preemptive)	29:9:4
Dialysis modality after graft failure (HD:PD)	36:6

Abbreviations: RT, renal transplantation; HD, hemodialysis; PD, peritoneal dialysis.

PATIENTS AND METHODS

We enrolled 42 patients who underwent graft nephrectomy from January 2005 to December 2012. We divided data collected retrospectively from hospital records into early (n = 17) versus late (n = 25) graft nephrectomy groups based on transplant survival up to or beyond 6 months. We investigated the cause for nephrectomy, graft survival rate, dialysis modality and before transplantation mean duration, as well as surgical complications. They included sepsis, myocardial infarction, intraoperative or postoperative bleeding requiring transfusion, and all-cause mortality during the hospitalization for the nephrectomy. The mortality rate was estimated as the number of deaths during the perioperative period among patients who underwent graft removal.

Rejection and chronic allograft nephropathy were diagnosed based on renal allograft biopsy results. The diagnosis of graft intolerance syndrome was based on the following clinical criteria in the absence of a concomitant infectious process: fever, malaise, hematuria, flu-like symptoms, pain, and increased graft size. This study was approved by our Institutional Review Board.

All data are presented as mean ± SD unless otherwise specified. Continuous variables at the start of treatment were compared with the use of the Mann-Whitney test, categoric groups with the Fisher exact test. A P value of $<.05$ was considered to be statistically significant. Univariate followed by a multivariate logistic regression analyses were used to determine the risk factor for operative-related complications. The statistical analysis used SPSS 18.0.

RESULTS

The baseline characteristics of patients who underwent graft nephrectomy are presented in Table 1. They included 29 men and 13 women of overall mean age 45 years (range, 10–71). Eighteen subjects (43%) received a renal allograft from a deceased donor. The overall mean graft survival was 24 months (range, 0–156). Before renal transplantation, the mean dialysis duration was 58 months (range, 0–252); 29 patients (69%) had maintained hemodialysis as their pretransplant dialysis modality. After graft failure, 36 patients (86%) chose hemodialysis as the replacement therapy.

Graft nephrectomy was performed because of early (n = 17) or late (n = 25) graft failure. Of the 17 patients graft nephrectomies within 6 months, 12 and 5 were performed because of inreversible acute rejection and primary allograft nonfunction, respectively (Fig 1). Almost all (95%) of the late graft failures were caused by graft intolerance syndrome; 1 was due to a malignancy in the grafted kidney. The clinical characteristics did not significantly differ between the early and late graft nephrectomy groups, except for operation-related complications (Table 2), which were significantly higher among subjects with early graft nephrectomy ($P < .05$). The graft was removed with the capsule in all early cases, whereas the subcapsular technique was performed for all late nephrectomies.

Of the 42 patients who underwent graft nephrectomy, 1 (2.38%) died during the postoperative period. Operation-related complications occurred in 13 patients (31%), bleeding was the most common problem (Table 2). Operation-related complications were more common among the early (n = 10) than the late (n = 3) group. All 10 patients who experienced perioperative bleeding received blood transfusions. Sepsis and wound infection were observed in addition to bleeding. Of the 10 patients in the early graft nephrectomy group, 8 had an bleeding tendency, such as a low platelet count or a prolonged prothrombin time at the time of the operation. The bleeding tendency developed after antirejection therapy with plasma exchange or antithymocyte globulin (ATG) administration. To identify the risk factors for operative-related complication in each group, we analyzed clinical and laboratory parameters with the use of univariate and multivariate logistic regression models (Table 3). Among the early graft nephrectomy group, the presence of antirejection therapy was the significant independent factor for the development of adverse outcomes.

DISCUSSION

In this study, we have reported our experience about graft nephrectomy in patients with failed renal allografts. The

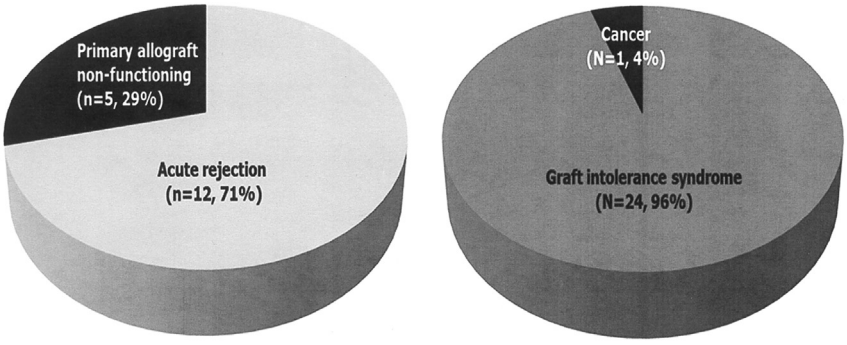

Fig 1. Cause of early and late graft nephrectomy. The main cause of early and late graft nephrectomy was irreversible acute rejection and graft intolerance syndrome, respectively.