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Original article

Living donor kidney transplantation in the hemodialysis-naive and the hemodialysis-exposed: A short term prospective comparative study☆

R.A. Gadelkareem[a], D.A. Hameed[a,*], A.M. Moeen[a], A.M. El-Araby[b], M.A. Mahmoud[b], A.M. El-Taher[a], A.A. El-Haggagy[a], M.F. Ramzy[c]

[a] *Urology University Hospital, Assiut University, Assiut, Egypt*
[b] *National Institute of Nephrology and Urology, Egypt*
[c] *Department of Internal Medicine, Faculty of Medicine, Cairo University, Egypt*

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Abstract
Introduction: Preemptive (P) living donor kidney transplantation (LDKT) provides better survival rates, quality of life and economic saving. However, the extent of these advantages over those with a short period of pre-LDKT dialysis is not known.
Objectives: Evaluation of the patients' characteristics and short-term outcomes of PLDKT and LDKT after a pre-transplant period of hemodialysis (HD) not >6 months.
Patient and methods: This study was conducted between June 2010 and June 2012 and included two groups. Group-I included recipients without HD before operation. Group-II included those who had a period of HD ≤6 months. Recipients and donors were evaluated according to the classic work up.
Follow-up for 12 months was scheduled.
Results: Group-I included 30 recipients and group-II included 15 recipients. Demographic and clinical characteristics were similar except for mean recipient age (44 *versus* 34.3 years; $p = 0.024$), recipient donor age difference ($p = 0.03$), job categories ($p = 0.047$) and ABO distribution ($p = 0.01$). Cumulative graft (0.88 *versus* 0.93) and recipient (0.92 *versus* 0.100) survival rates were non-significantly different. Graft function and mean serum creatinine level were within normal up to 12 months. Acute graft rejection (AGR) was significantly higher in group-II (16.7% *versus* 46.7%; $p = 0.03$). However, lymphoceles were significantly

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* Corresponding author.
E-mail address: diaa_hameed@hotmail.com (D.A. Hameed).

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more common in group-I (40% *versus* 6.7%; $p = 0.02$). There was no delayed graft function (DGF), major urinary or vascular complications.
Conclusion: PLDKT has a lower rate of AGR. Despite it has a higher rate of lymphoceles, it saves the patient the morbidities of vascular access and inconveniences of HD. Hence, PLDKT is recommended as the first choice for each KT-candidate.

Introduction

Kidney transplantation (KT) is the best treatment for end-stage renal disease (ESRD). It improves survival and quality of life and reduces complications [1]. This is maximized when preemptive KT (PKT) (before starting chronic dialysis) and living kidney donation (LKD) are employed [2]. Preemptive living donor kidney transplantation (PLDKT) also avoids the vascular access placement and inconveniences of dialysis. Advantages of PLDKT were documented since late 1990s [2,3]. It provides a 52% reduction of the risk of graft failure in the first year, 82% in the second and 86% during subsequent years, when compared with KT after dialysis [2]. Also, it was associated with significantly lower incidence of delayed graft function (DGF) and acute graft rejection (AGR) [4,5]. However, other post-KT complications were not studied specifically after PLDK [6].

Although the duration of dialysis before KT was reported as the strongest risk factor for graft and patient survival, the exact time-point at which this significance emerges was not well-settled [7]. Some researchers found that significant graft failure and patient mortality starts when the duration of pre-KT dialysis is >180 days and >1 year, respectively [8].

In this study, we compared the characteristics of patients and short-term outcomes including survival rates and common complications in PLDKT and living donor kidney transplantation (LDKT) after a period of dialysis ≤6 months.

Patients and methods

Between June 2010 and June 2012, 45 ESRD patients who were followed up in our department or referred to our hospital for KT were included in this prospective comparative study. They were divided into two groups according to the state of HD: KT before dialysis (PLDKT; Group-I, no: 30) or KT after a period of HD ≤6 months [Conventional LDKT (CLDKT); Group-II, no: 15]. The demographic and clinical characteristics of both groups and their short-term (1-year) outcomes were compared (Table 1). All recipients and donors were prepared routinely. HD was done for 10 patients in group-I (one and only session) and all group-II patients on the day before the operation. Medico-legally, in both groups, only the donors of 21–50 years age were accepted.

All grafts were harvested from living donors (LDs) through a classic flank incision and transplanted through a right paramedian incision to the recipients' external iliac vessels in an end-to-side fashion. Modified Lich-Gregoir technique on JJ stent was employed. The procedures were done by the same set of surgeons in all cases.

Strict post-operative measuring of serum creatinine, urine output, drain output, and fluid replacement was done up to discharge. Drain was removed on the 4th day or when its output is <100 ml/24 h. JJ-stent was removed after 4–6 weeks. Ultrasonography was used to detect any peri-graft fluid collection. Cases of AGR were managed by intravenous steroid bolus injection and if failed, by anti-thymocyte globulin.

Follow up period was 12 months.

Results

Demographic characteristics

Demographic characteristics are demonstrated in Table 1. There was no statistically significant difference between both groups regarding diabetes mellitus, hypertension, smoking, previous surgery, the main primary kidney diseases [mainly glomerulonephritis (40%), hypertensive nephropathy and polycystic kidney disease (PCKD)], degrees of HLA matching and the donated kidney parameters [total donor glomerular filtration rate (GFR), split GFR and laterality of the donated kidney].

In group-I, means of pre-KT serum creatinine and estimated GFR (eGFR) were 7.96 ± 2.0 mg/dl and 8.27 ± 4.42 ml/min/1.73 m^2, respectively.

In group-I, 23 recipients completed the 12 months follow-up, 2 recipients died and 5 were missed during follow-up. Group II included only 15 recipients who presented to us during the period of the study and fulfilled the inclusion criteria (HD for ≤6 months), all of them completed the follow up period.

Graft function and survival rates

Grafts' responses and complications during the first post-KT year are demonstrated in Table 2.

Serum creatinine levels progress

Mean serum creatinine at 1, 3, 6, 9 and 12 months remained within normal values in both groups. In group-I mean serum creatinine rose steeply but insignificantly compared to 1st month ($p = 0.07$). In group-II, mean serum creatinine remained similar or even lower than its level at 1st month ($p = 0.36$). Comparing both groups at these different time points, mean serum creatinine was comparable except at 1 month where it was significantly lower in group-I ($p = 0.049$).

In group-I, three males had mild impaired serum creatinine level in the first post-KT year and one female had marked serum creatinine