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Original Research

Kidney Transplantation: Single-Center Experience

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Abstract

Objectives: This study aims to present our cadaveric and living related donor kidney transplantation experience.

Methods: Between September 2009 to February 2015, renal transplantations were performed to 417 patients in Medicana International Ankara Hospital organ transplantation center.

Results: Of the patients, 231 were male, and 186 were female. Of the transplantations, 385 came from a living donor, and 32 came from a cadaver donor. The degree of kinship; 324 (77.7%) transplants were received from relatives, 5 (14.1%) with approval by the ethical committee, 32 (7.7%) from cadavers and two (0.5%) with cross-matching. Post-Operative Complications in recipients; lymphocele was found within the graft in two cases, urinary anastomosis leakage was detected in two cases, wound infection was detected in four cases, and hematoma in one case. We had no mortality in post operative or early follow up periods.

Conclusion: The morbidity and mortality rates in our organ transplantation center, regarding renal transplantations, are consistent with the literature.

Keywords: Kidney transplantation; transplantation; kidney failure.

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Kidney transplantation is the most effective treatment method for end-stage renal failure.[1] It also increases the life span and quality of life of patients with chronic renal failure. A better understanding of organ and tissue functions, the development of surgical techniques, new and effective immunosuppressive and antimicrobial drugs increase transplantation success each day.[2]

In this study, we aimed to share our 5-year transplantation experience by presenting the data of kidney transplants performed in our clinic from 2009 when the kidney transplants started, to February 2015.

Methods

In this study, demographic data (age, gender, donor-recipient degree of kinship), postoperative complications, graft and patient survival data of 417 patients who underwent renal transplantation were reviewed retrospectively.

In preparation for the renal transplantation, renal donor and recipient candidates were examined and enlightened about all risks and possible outcomes of the operation and were taken to preoperative preparation. Immunologic donor-recipient matching was determined by blood group, HLA typing, lymphocyte crossmatch and HLA antibodies. Immunologically suitable donors were evaluated by measuring renal functions, serum creatinine levels, 24-hour urine creatinine clearance (≥80ml/min) and urine protein measurement (≤150 mg/day). To investigate possible renal pathologies in donors radiologically, ultrasonography (USG) and computed tomography angiography (CTA) to reveal vascular and ureter anatomy were performed. Hepa-

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titis B, C and CMV virus serological tests were administered to all of the renal donor and recipient candidates The recipients were evaluated with preoperative Doppler USG and the suitability of the iliac artery and vein was evaluated. A detailed systemic examination was performed by the anesthesiology department, treatment of accompanying comorbidities and an anesthesia plan was made accordingly.

The recipients were induced with preoperative polyclonal (anti-thymocyte globulin-ATG) or monoclonal (basiliximab) antibodies in case of less than 3 HLA match in tissue matching or in cases of cadaveric transplantation. In cases with less than 3/6 compatibility, our standard induction preference was anti-thymocyte globulin. Induction therapy was applied as 100-150 mg/day for 3-5 days. The duration and dosage of the treatment were adjusted according to the clinical response. Induction with basiliximab was preferred in patients over 65 years of age.

Patients were administered premedication with 0.05 mg.kg-1 IV midazolam before the operation, and 3 mg.kg-1 propofol, 0.5 mg.kg-1 tracrium and 0.1 mcg.kg-1 fentanyl were applied for anesthesia induction. The maintenance of anesthesia was provided with 5 mg.kg-1.hr-1 propofol, 0.25 mcg.kg-1.hr-1 remifentanil. Routine ASA monitoring and invasive intraarterial blood pressure monitoring were performed during the operation. Central venous pressure monitoring was also performed by central venous catheterization to the recipients with severe cardiac comorbidity.

Nephrectomies in live donors were performed by laparoscopic transperitoneal or open surgical methods. Left nephrectomy was performed in all patients who did not have vascular anomaly or a condition that specifically required the choice of the other kidney.

The graft was placed in the right iliac fossa in recipients if there was no previous surgical or anatomical disorder, and the graft artery was anastomosed to the external iliac artery of the recipient and the graft vein to the recipient external iliac vein. The graft ureter was anastomosed to the recipient's bladder with a double-J stent and the operations were completed. Operations were completed by placing drains in the operation area to the donors and recipients. Patient-controlled IV tramadol analgesia method was preferred for post-operative analgesia.

Donors were followed up at the clinic during the postoperative period. Urinary catheters of the patients were withdrawn on the postoperative 1st day and drains on the 2nd-3rd day. The patients were discharged on the postoperative 3rd-4th day. Routine controls were carried out in the first postoperative month and in the first year. Recipients were followed up at the clinic postoperatively. Drains were withdrawn on the postoperative 3rd to 5th days and the urinary catheters on the postoperative 5th day. Immunosuppressive treatment of patients who did not develop complications was regulated and was discharged from the hospital on the postoperative 6th day. Tacrolimus, MMF (mycophenolate mofetil), steroid regimen was applied as immunosuppressive therapy in patients. For infection prophylaxis, trimethoprim/sulfamethoxazole, valganciclovir and fluconazole were administered for six months.

The diagnosis of acute and chronic rejection was made by the patient's medical state, blood biochemistry, creatinine levels, renal color Doppler ultrasonography and biopsy. In the case of cellular rejection, 3-day 500mg methylprednisone pulse treatment was applied as the first option. Polyclonal antibodies (anti-thymocyte globulin-ATG) were added to pulse prednisolone therapy in cases with steroid resistance. In patients developing humoral rejection, plasmapheresis and IVIG treatment protocol were applied if necessary.

Statistical Analysis

Statistical analyses were performed using SPSS 16.0 for Windows (SPSS Inc., Chicago, IL, USA) package program.

Results

Renal transplantation was performed in 417 patients between September 2009 and February 2015 in our center. Of the transplantations, 385 (92.3%) transplantations came from a living donor and 32 (7.7%) came from a cadaver donor. Of the patients who had transplants, 186 (44.6%) were female and 231 (55.4%) were male (Table 1). Mean age of the donors was 46.6±12.6 years, and the mean age of the recipients was 36.2±8.9 years (Table 2). When the degree of kinship between the donors-recipients is examined, 324 (77.7%) transplants were received from relatives, 59 (14.1%) with approval by the ethical committee, 32 (7.7%) from cadavers and two (0.5%) with cross-matching (Table 3). While 256 of the patients had three or more HLA matchings, in 161, this number was below three. When the causes of end-stage renal failure of the recipients were evaluated

Table 1. Recipient Demographic Data

	n
Female	186
Male	231
Total	417

Table 2. Mean Age

	Year
Donor	44.6±12.6
Recipient	36.2±8.9

etiologically, hypertension was found to be the most common cause among all transplanted patients with a rate of 47.7% (Table 4). Idiopathic causes were the second most common (17%), and glomerulonephritis was the third most common cause (12.5%) (Table 4). The rate of patients with end-stage renal failure due to diabetes was 5%. The number of patients undergoing preemptive transplantation independent of etiology was 22 (5.3%). Plasmapheresis, IVIG and rituximab induction were applied to two cases with preoperative panel reactive antibody (PRA) positivity. Then, the transplantation was performed.

When transplant recipients and donors were examined concerning post-operative surgical complications; no surgical complications were seen in donors, in recipients lymphocele was found within the graft in two cases, urinary anastomosis leakage was detected in two cases, wound infection was detected in four cases, and hematoma in one case (Table 5). Two cases that developed lymphocele were treated with percutaneous drainage. Patients with urinary anastomosis leakage were treated conservatively with urinary catheter monitoring. Wound infection of four cases was treated with drainage of the infected collection through the incision. In one case, with post-operative acute anuria, upon seeing a collection in the operation area and the flow rate decreased in the graft artery with USG, the patient was taken into operation again. In the intraoperative evaluation, a hematoma compressing the graft artery was detected. The graft was removed, and cold perfusion was applied again, the hematoma at the operation site was removed, and the graft was transplanted again.

Graft loss occurred in one case with hyperacute rejection and two cases with subacute rejection. Rejection developed and graft loss occurred in one case due to drug incompatibility.

Table 3. Recipient-Donor Degree of Kinship

	n
Relatives	324
Cadaver	32
Cross-match	2
Ethics Committee	59
Total	417

Table 4. Recipient End-Stage Renal Failure Causes

	n
Idiopathic	71
Glomerulonephritis	52
Diabetes Mellitus	21
Hypertension	199
Focal Segmental Glomerulosclerosis	5
Amyloidosis	24
Polycystic Kidney Disease	8
Vesico-Ureteral Reflux	21
Urolithiasis	12
Hemolytic Uremic Syndrome	1
Alport Syndrome	2
Trauma	1
Total	417

Table 5. Post-Operative Complications

	n
Lymphocele	2
Urinary Leakage	2
Wound Infection	4
Hematoma	1
Total	9

Conclusion

Today, renal transplantation has become the gold standard treatment option in the treatment of end-stage renal failure, by eliminating the morbidity associated with dialysis treatments, prolonging life, increasing the quality of life and having a lower cost than dialysis in the long term.[3–6]

Following the first successful kidney transplantation from living donor in our country performed by Haberal et al.[7] in 1975, according to data of the Turkish Society of Nephrology of 2013, a total of 2944 kidney transplantations, of which 80.13% from living donors per year, is performed annually.[8] Following the first kidney transplantation performed in our clinic in 2009, 417 kidney transplantations were carried out until 2015. Of transplantations performed in our clinic, in line with Turkey's average numbers, the grafts are mostly from living donors. Transplantation from the cadaver rate is 7.7% in our center; this rate is below the average rates in Turkey; however, awareness-raising activities to increase cadaveric organ donation is promising for these rates to increase.

It is important for long-term results that transplantation (preemptive renal transplantation) is preferred as the first option in patients with early diagnosed chronic renal failure and progressive disease. Long-term dialysis treatment may increase the tendency to acute rejection by causing activation in the immune system.[9, 10] Mange et al.[11] demonstrated the effects of preemptive renal transplantation on graft survival compared to non-preemptive transplantation, by comparing the 1-year graft survival rates of the 8481 transplant recipient from live donors, and found a 52% reduction in graft loss for the first year. Kasiske et al.[12] revealed similar data for preemptive renal transplant recipients, both from the cadaver and living donors. 5.3% (n=22)

of the kidney transplants performed in our center were done in the preemptive period and the contribution to the life expectancy and quality of these patients was increased. When the literature is examined concerning complication rates, it was found that urinary anastomosis leakage has been reported between 0% and 8.9% in different transplantation centers.[13–15] The rate of urinary leakage was found to be 0.48% in the analysis of our own clinical data. Different centers reported rates between 0.6% and 40% for postoperative lymphocele development.[16–21] The rate of lymphocele development was found to be 0.48% in our center's records. Compared to the literature data, the low complication rates in our clinic are thought to be due to the experience of the surgical team, the standardized practices during preoperative, preoperative and postoperative periods, a high number of cases.

Outcome

The graft survival rates of the patients are above 99% at the end of the first year. Considering the 5-year experience of our center, we can say that kidney transplantation has been carried out successfully at international standards.

Disclosures

Ethics Committee Approval: Retrospective study.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

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