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RENAL TRANSPLANTATION A BETTER QUALITY OF LIFE FOR UREMIC PATIENTS, REVIEW OF RESULTS IN 69 KIDNEY TRANSPLANTIONS

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ABSTRACT

Between June, 1984 and January 20, 1987, 69 kidney transplantations were performed in our department. All kidneys were acquired from living donors. 63% of the cases were high-risk MLC-positive (poorly matched), and all but one were from related sources. There were only five rejected kidneys, all of which occurred in kidneys from parent donors. 28 recipients received donor-specific transfusions. Immunosuppression was with azathioprine and prednisone in 40 patients, and in 29 recipients, cyclosporine and prednisone were the immunosuppressive agents. In four patients, ureteral fistulas occurred but in all of these cases, the grafts were saved by surgical intervention and no mortality resulted. Overall patient survival in 69 transplantations after two and a half years was 95.6% (Average follow up 9.7 months) Renal transplantion is considered a safe procedure that can improve the quality of life for patients with end-stage renal disease on hemodialysis.

INTRODUCTION

Kidney transplantation has now emerged as the treatment of choice for end-stage renal disease[15,16,17] Surgical techniques in renal transplantation have been refined and post-operative complications have gradually decreased. Graft and patient survival has steadily improved for several reasons, one of which seems to be utilization of donor-specific transfusions and cyclosporine.

Better and milder immunosuppression has decreased systemic and local infectious complications, although managing infection is still a challenging problem. In this article, we would like to present our experience with renal transplantation in a two and a half year period. We have elected only living sources for transplantion, and as our results demonstrate, a better result in comparison to organ transplantation from cadavers is noted (despite the fact that the majority of our patients were poor-match cases with positive MLC tests).

MATERIALS AND METHODS

Renal transplantation was initiated at the Labbafi-Nejad Medical Center in June, 1984 and since then, a steady upward trend has emerged, with 69 consecutive transplantations performed as of January 20, 1987 (Fig. 1). 23 cases were HLA identical, 45 were haploidentical with the majority (43) being MLC-positive high-risk cases, and one case was non-related. The age distribution for recipients was between 14 and 53 years old (Fig. 2). 47 recipients were male and 22 were female. Of 69 donors, 32 were parents, 35 were siblings, one was daughter-to-father, and one donation was from a patient's spouse (non-related) (Fig. 3).

Donor nephrectomy was perfomed via a midline transperitoneal incision in 20 donors, and the flank approach with 12th rib resection was used for nephrectomy in the last 49 donor nephrectomies. Kidneys were irrigated with chilled (4 °C) Ringer's solution (500 cc) containing 10,000 units of heparin, 10 cc lidocaine (one

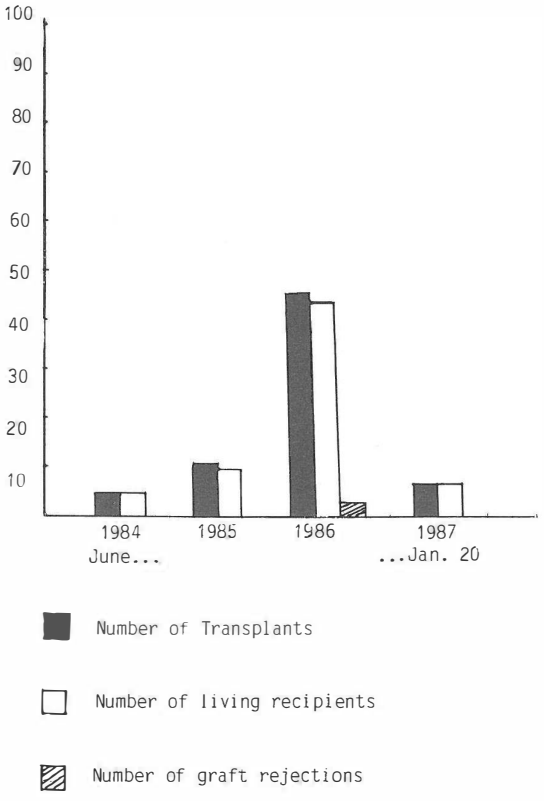

Fig. 1: Number of Transplants Per Year (Total 69)

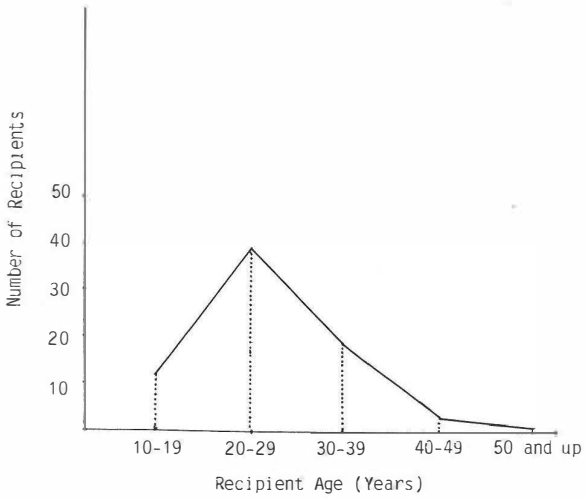

Fig. 2: Age Distribution of 69 Recipients

percent), and 1ml bicarbonate. All transplantations were performed in the right iliac fossa, disregarding whether the donated kidney was from the right or left. Right-kidney donor nephrectomy was done when the donor was a young female at child-bearing age and

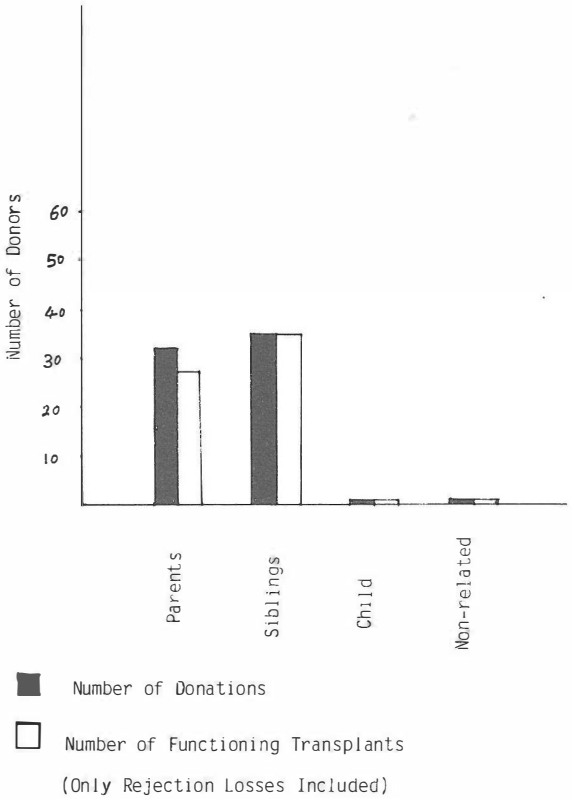

Fig. 3: The source of donation and the number of functioning kidneys.
Note: All rejections were in the parents group (mothers).

when the left kidney had multiple arteries. Arterial anastomosis to the internal iliac artery was performed with an end-to-end interrupted technique using 6-0 nylon in all 69 cases. Five cases had double renal arteries and in one patient, a triple renal artery of clinical significance was present, all three branches of which were anastomosed to the recipient vessels. Only small upper-pole arteries were ligated, and no surgical problems occurred in regard to the arterial anomalies. Ureteral anastomosis was performed by classic anti-reflux reimplantation to the bladder[6,7] in 67 recipients, by pyeloureterostomy in one and pyelovesicostomy in another recipient.

IMMUNOSUPPRESSION

All patients with negative MLC were given azathioprine and prednisone (25 recipients). 18 haploidentical recipients with positive MLC received azathioprine-prednisone immunosuppression, while in 27 cases, cyclosporine and prednisone were used. In seven patients, azathioprine was switched to cyclosporine ,four due to rejection (two mortalities) and the remaining three in patients with wound infections. 28 recipients

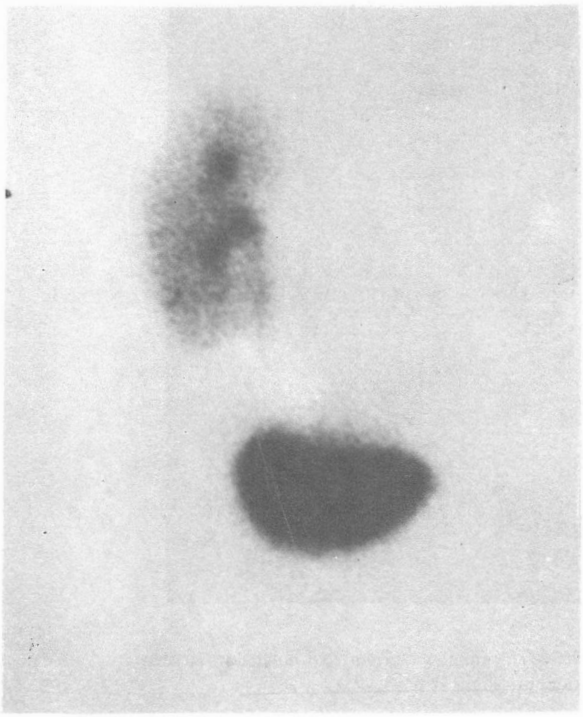

Fig. 4: Isotope scan of a transplanted kidney. Recipient's bladder is nicely filled with isotope material excreted from the transplanted kidney.

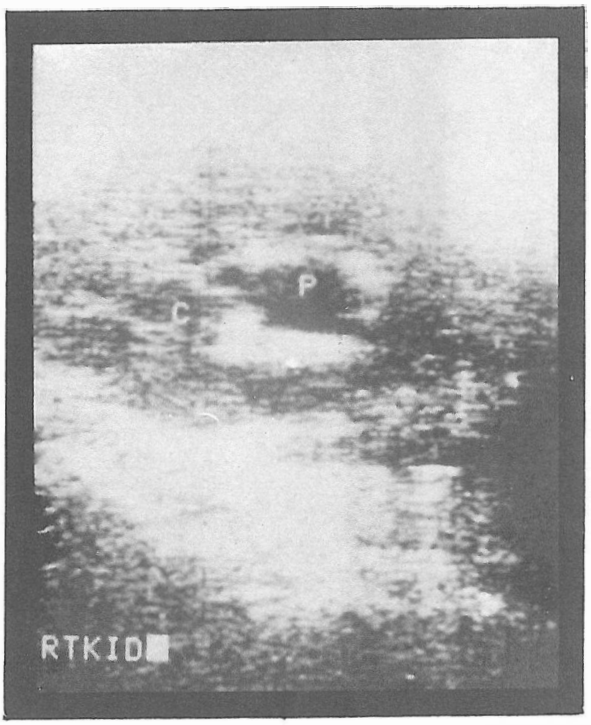

Fig. 5: Ultrasonogram of a transplanted kidney with ureteral obstruction. Dilated pelvis and calyces are seen.

underwent donor-specific transfusions (21 with positive and seven with negative MLC).

FOLLOW-UP STUDIES

Patient follow-up consisted of measurement of BUN and creatinine levels, isotope studies (Fig. 4), sonography (mainly for differentiation of obstruction from retention) (Figs. 5,6),and measurement of blood cyclosporine levels periodically and as indicated.C.T.scanning was used occasionally to detect any abnormal collection when sonography was not conclusive (Fig. 7).

RESULTS

68 of the 69 transplanted kidneys began to produce urine a few minutes after completion of the vascular anastomoses and only one ATN occurred which recovered within two weeks. 66 patients are alive (overall patient survival for two and a half years was 95. 6%). Two patients died due to infectious complications (one during an acute rejection episode) and one died of pulmonary embolism following hyperacute rejection.

There were five graft losses due to rejection,(Fig 8) two in the cyclosporine group and three in the azathioprine group. All rejections occured in parent-donor kidneys. 19 patients had rejection episodes, which were managed with 1g methylprednisolone IV for

Fig. 6: Ultrasonogram of patient in Fig. 5. Dilatation of pelvis and calyces is no longer seen. Ureteral obstruction was managed by connecting a Boari flap from the bladder to the renal pelvis of the transplanted kidney.

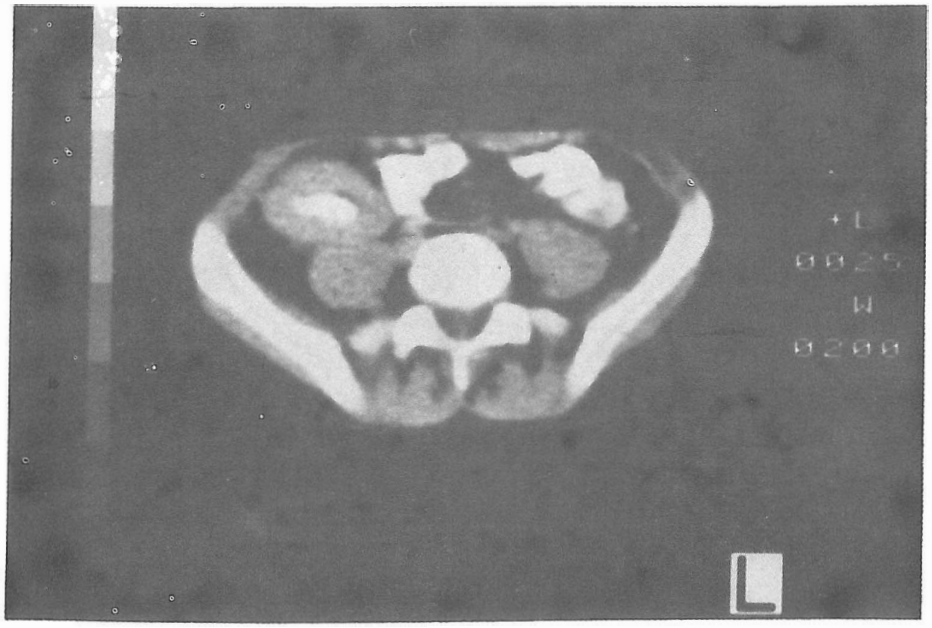

Fig. 7: C. T. Scan of the transplanted kidney in a patient with fever of unknown origin. No collection is seen around the transplanted kidney or in the pelvis.

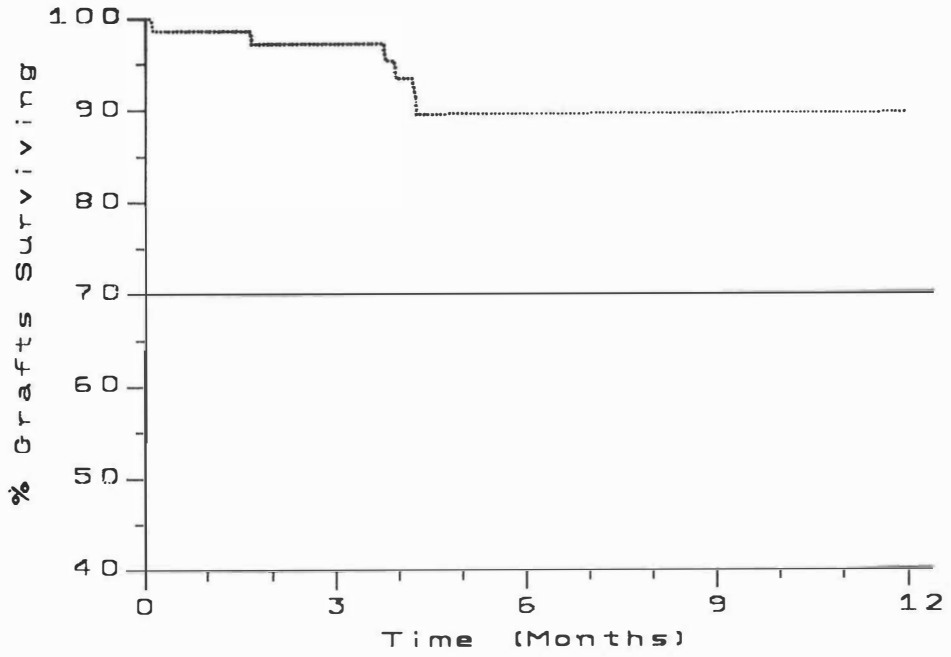

Fig. 8: One year graft survival CTS: Collaborative Transplant Study for renal transplantation in Labbafi-Nejad Med. Center of Tehran, registered in Prof. Opelz Registry.

three days. The highest number of rejection episodes were noted when non-specific transfusion and azathioprine were used for immunosuppression. At present, we have two ongoing protocols comparing the number of rejections in two groups: in one group, azathioprine and donor-specific transfusions are used and in the second group, cyclosporine and donor-specific transfusions are utilized. We are presently using donor-specific transfusions in almost all cases. The results will be published at a later date.

Four urinary fistulas occurred in the 69 renal transplantations (5.7%). There were no graft losses or

mortalities due to these fistulas. There was only one case of ureteral obstruction, which was managed with a Boari flap. There was one doubtful case of arterial stenosis (rejection was not ruled out). No pelvic lymphocele was noted. One subcutaneous collection extending to the pubis occurred which was emptied at bedside with no recurrence. No hematoma occurred.

In cases uncomplicated with fistula, there were three superficial wound infections, which were managed with drainage and proper antibiotic therapy. There was only one deep pelvic infection (following nephrostomy for ureteral obstruction as mentioned above) which was managed by surgical drainage and leaving the wound completely open. This, combined with a switch to cyclosporine and discontinuation of steroids finally managed the infection and the transplanted kidney was saved. One case of upper GI bleeding occurred in one of our older recipients (53 years of age) with no history of previous peptic ulcer disease, which was treated medically. Two cases of amebiasis and one case of typhoid fever occurred, which were also managed medically and with no adverse effect to the graft. No serious pulmonary complications occurred in patients who did not have rejection; one case of pneumonia was diagnosed in a recipient who experienced an acute rejection episode.

DISCUSSION

Renal transplantation is rapidly becoming popular in the world for the management of end-stage renal disease. A total of 46,536 transplants have been recorded as of june 1, 1985 in the UCLA registry during 23 years.[8] Living, related donor transplantation has given better results in years of comparing this method with cadaver kidney transplantation.[8] As more is learned about modern immunosuppression, less accurately matched kidneys are being transplanted successfully more often. The majority of our patients, who were haploidentical with MLC-positive tests (high-risk, poor-match cases), were prepared with preoperative transfusion, since this has been shown to increase survival.[2,9,10] We also used cyclosporine in the most poorly matched cases (as in the non-related one), since it has been shown to have a beneficial effect on graft survival in high-risk, poorly matched renal transplants.[3,11] Our results have been encouraging: five rejected kidneys in 69 cases during a 30-months period (Fig. 3).

Surgical complications of renal transplantation have been reduced considerably.[1] Ureteral fistula was one of the most difficult to manage surgical problems in the past, and was associated with a high number of graft losses and mortalities (25%),[12] but recently, with modification of immunosuppression and early operative intervention, grafts are more successfully saved and mortality is now rare.[5,6] As stated, we had four ureteral fistulas, in all of which the kidneys are functioning well following early repair, and no mortality occurred.

We prefer flank nephrectomy in donors, because this method provides an easier anterior and posterior approach to the renal vessels, does not enter the peritoneum, ambulates donors better post-operatively and allows them to breathe better in early post-operative days. Meticulous ligation of lymphatics can prevent lymphocele. We did not have any case of pelvic lymphocele endangering the graft. Managing infection in transplantaion is still challenging problem. The improvement in this regard is due to better aseptic condictions during surgery, better wound management, and especially, milder immunosuppression with less steriods used in the regimen. If any infection resistant to standard treatment is encountered, immunosuppression should be lowered for the benefit of the patient's survival. All reported cases of leukopenia occurred in recipients taking azathioprine, and none occurred in those using cyclosporine for immunosuppression. We replaced azathioprine with cyclosporine in three patients in order to be able to lower or discontinue prednisone therapy and manage infection. In one case of deep pelvic abscess, discontinuation of steroids was the only measure which was able to cure the patient's persistently recurring abscesses.

Renal transplantation can bring fertility back in some patients with end-stage renal disease[13,14], as four of our patients regained fertility. Of these four, one normal delivery in one recipient was accompanied with no adverse effect either on the graft or on the baby. Another female recipient is pregnant. Two other recipients were male, the wives of whom became pregnant. One of them delivered a normal baby and the other is due in a few months.

We would like to conclude that renal transplantation brings much better quality to the lives of patients with end-stage renal disease.

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