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Original Article

Pediatric renal transplantation: 5 years experience from Jaslok Hospital, Mumbai

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ABSTRACT

Objectives: To evaluate the patient characteristics, complications and outcome of renal transplantation in pediatric end stage renal disease (ESRD).
Type of study: Retrospective observational analysis.
Subjects: Children with ESRD subjected to renal transplantation in last 5 years (April 2007–March 2012) at Jaslok Hospital.
Methods: Demographic data of the transplant recipients and donors, prior dialysis, surgical details of renal transplantation, immunosuppression, medical and surgical complications and post-transplant follow up and outcome was assessed.
Results: 20 children in the age group 6–18 years (mean 14.6 years) underwent renal transplantation in last 5 years at our hospital. Fifteen percent cases ($n = 3$) weighed < 20 kg at transplantation. Primary cause of renal failure was glomerular in 30%, tubulo-interstitial in 45% and unknown in 25%. All were primary transplants, pre-emptive in 15%; live related in 95%, cadaveric in 5%. Mothers were the kidney donors in 60% cases. Induction therapy was used in 60% while maintenance therapy comprised of triple regimen. UTI was the commonest surgical complication (40%) followed by perinephric collection (20%), lymphocoele (15%) and renovascular thrombosis (10%, associated with graft dysfunction). 15% cases experienced graft rejection (acute cellular rejection (ACR), 66.6% and antibody mediated rejection (AMR), 33.3%) with complete renal recovery following treatment.73.4% and 72.8% cases had functioning grafts at the end of one and three years respectively.
Conclusions: Pediatric renal transplantation was associated with 100% patient survival and is a safe therapeutic option for children with ESRD.

1. Introduction

Renal transplantation is the logical and physiological option that can be offered to children suffering from ESRD for obvious reasons. Besides providing superior quality of life, it is economical in the long term compared to the continuous ambulatory peritoneal dialysis (CAPD) and maintenance hemodialysis (HD), which is especially difficult in children. Pediatric renal transplantation lags significantly behind the

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adult program although results have been comparable in both in our subcontinent. Increased awareness about the merits of renal transplantation, clearing the misconceptions regarding pediatric renal transplantation among the parents and increase in number of centers extending such specialised services to children with ESRD will improve this dismal picture. Strategies to increase the donor pool in the form of ABO incompatible renal transplantation and availability of marginal donors along with potent immunosuppression have shown promising results.[1,2] We share our single centre experience in managing renal transplantation in children.

2. Subjects and methods

Data retrieved from the case sheets of the children with renal failure subjected to renal transplantation in last 5 years (April 2007–March 2012) at Jaslok Hospital was evaluated. Information regarding donor characteristics; recipient's age, weight at transplantation, primary renal disease, mode and duration of prior dialysis therapy, surgical technique of transplantation, immunosuppression protocol, pre-op, intra-op, and post-operative medical and surgical complications encountered and eventual outcome was assessed. HLA typing and tissue cross match was performed as a part of pretransplant assessment. Native nephrectomy was performed in a small sized recipient usually unilateral right sided to accommodate the adult sized kidney or bilaterally in cases with recurrent urosepsis and difficult to control hypertension. Ureteric stenting was not done as a routine in live related transplants. Stents were placed early in the disease course to decompress the obstructed kidneys and thereby assist conservative management of chronic kidney disease up to stage 4. Delayed graft function (DGF) was defined as persistent high serum creatinine level or requirement of dialysis in first post-transplant week. Graft dysfunction was defined in presence of raised serum creatinine levels, fall in urine output, proteinuria and/or hypertension. Assessment of volume status, calcineurin levels in blood, septic screen, imaging and renal biopsy was performed to ascertain the cause of graft dysfunction. Immunosuppression protocol comprised of induction therapy (IL-2 blockers/ATG) whenever feasible followed by triple maintenance therapy (steroids, mycophenolate, tacrolimus/cyclosporine). Routine screening for CMV, EBV and BK virus was done based on serology and PCR based assay wherever feasible. Prophylaxis with cotrimoxazole for *Pneumocystis jirovecii*; fluconazole for fungi; acyclovir for HSV and ganciclovir/valganciclovir for CMV was instituted in high risk cases. Prior to discharge post-transplantation, renal ultrasound and radionuclide renal scan was done.

3. Results

20 children (18 boys and 2 girls) with mean age 14.6 years (range 6–18 years) at transplantation constituted the study group. Two children (10%) were <10 years; nine children (45%) belonged to 10–15 years and >15 years age group respectively (Fig. 1). Three children (15%) weighed < 20 kg at transplantation, smallest recipient weighing 13 kg while the rest weighed > 20 kg. Pre-emptive transplantation was possible in 3 cases (15%) while HD (14/17, 82%) and CAPD (3/17, 17.6%) was the mode of renal replacement therapy in the remaining children for a period ranging from 2 weeks to 7 years prior to renal transplantation. CAPD was successfully managed for almost 7 years in two children belonging to a rural village. Primary cause of renal failure was glomerular in (6/20) 30%; tubulo-interstitial in (9/20) 45% cases while in the remaining group (5/20, 25%)the cause was not known and these were referred with bilaterally small contracted kidneys at transplantation (Table 1). Majority had live related transplantation (n = 19/20, 95%) while only one child underwent deceased donor transplantation. All 20 transplants had ABO compatible recipients and donors. The sources of the grafts were: mother (n = 12/20, 60%); father (n = 4/20, 20%); grandmother (n = 2/20, 10%) and uncle (n = 1/20, 5%). Induction therapy was instituted in 12 cases (60%) (Daclizumab, n = 4, Basiliximab, n = 2 and ATG, n = 6); while the rest were treated with IV steroids along with tacrolimus and mycophenolate. Steroid free protocol was used in two cases of which one developed acute cellular rejection. Extraperitoneal surgical approach was practiced in all cases. Unilateral or bilateral native nephrectomy was performed in four cases (20%) at the time of transplantation. Internal or common iliac artery was used for arterial anastomosis while external or internal iliac vein was used for venous anastomosis. Ureteral anastomosis was performed using modified Lich-Gregor technique. Ureteric stenting was done in five cases (25%) either intra-op or post-operatively. Follow up period ranged from 7 months to 68 months (mean 35.5 months).

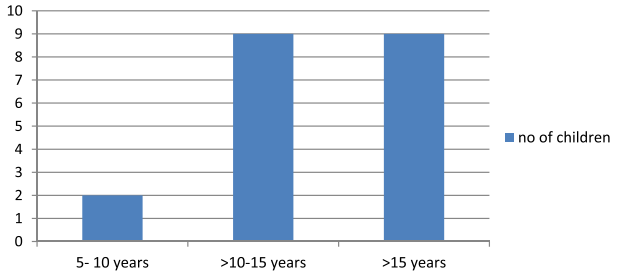

Fig. 1 – Distribution of patients as per age at transplantation.

Table 1 – Primary cause of renal failure.

Glomerular (n = 6, 30%)	Tubulo-interstitial n = 9, 45%	Unknown N = 5.25%
Chronic GN (n = 4)	PUV (n = 5)	
Alport syndrome (n = 1)	Medullary cystic disease (n = 1)	
MesPGN (n = 1)	Chronic interstitial nephritis (n = 1)	
	Prune belly syndrome (n = 1)	
	VUR (n = 1)	