ANALYSIS OF DECEASED DONOR KIDNEY TRANSPLANT OUTCOMES AFTER DESENSITIZATION THERAPY USING IVIG AND RITUXIMAB IN HIGHLY HLA SENSITIZED PEDIATRIC PATIENTS

CEDARS-SINAI MEDICAL CENTER®
Comprehensive Transplant Center

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ABSTRACT

INTRODUCTION: Sensitization to human leukocyte antigen (HLA) is a significant barrier to transplant for pediatric patients. Desensitization therapy using IVIG and Rituximab improves transplant rates and long term patient survival in highly sensitized pediatric patients (Vo et al N Engl J Med 2008) (PRA>80%, HS, +DSA). Patients who have developed anti-HLA donor specific antibodies (DSA) experience longer wait times, increased rates of rejection, and decreased graft survival compared to non-sensitized recipients. Here we examined the outcomes of HLA sensitized pediatric patients who received IVIG and Rituximab desensitization therapy prior to receiving kidney transplants.

PATIENTS & METHODS: Between September 2008 and January 2012 a total of 6 HLA highly sensitized pediatric patients received desensitization therapy using IVIG and Rituximab (IVIG 2gram/kg x2, Rituximab 375mg/m^2 x1.) Two patients also received plasmaspheresis (PLEX). Immunosuppression for transplantation included alemtuzumab (Campath®) and IVIG for induction, followed by tacrolimus, mycophenolate, and steroids for maintenance. We examined time to transplant from desensitization, panel reactive antibody(PRA) levels pre and post desensitization, T and B cell flow crossmatch at the time of transplant, patient and graft survival, acute rejection episodes, and viral infections.

RESULTS: All 6 patients (100%) were transplanted (5 DD) at a median time of 37 days (mean 65 days) post desensitization. PRA levels pre and post desensitization were unchanged. The mean T-flow crossmatch at the time of transplant was 33 mean channel shift (MCS), the B-flow was 165 MCS. 1 patient lost the allograft secondary to CMV and BK infection followed by recurrent episodes of acute cellular rejection (ACR) resistant to therapy. Two of 6 patients had C4D+ antibody mediated rejection (AMR) successfully treated with pulse steroids, IVIG, and Rituximab. Mean serum creatinine of 5 patients with functioning grafts is 1.22 (median follow up 464 days post transplant). 3 out of 6 patients developed viral infections (1 CMV +BK, 1 CMV + EBV, 1 CMV alone). No BK nephropathy was seen.

CONCLUSIONS: Findings suggest that desensitization with a combination of IVIG and Rituximab with alemtuzumab induction allows for successful transplantation in highly sensitized pediatric kidney transplant recipients. There was 100% patient and graft survival at 1 year post transplant. Even though the risk of AMR is high, treatment of AMR stabilized renal function.

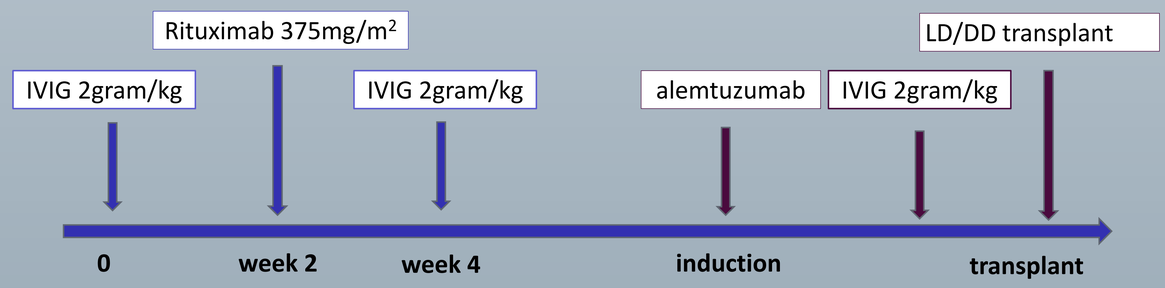
BACKGROUND

Sensitization to human leukocyte antigen (HLA) is a significant barrier to transplant for pediatric patients. Desensitization therapy using IVIG and Rituximab improves transplant rates and long term patient survival in highly sensitized pediatric patients (Vo et al N Engl J Med 2008) (PRA>80%, HS, +DSA). Patients who have developed anti-HLA donor specific antibodies (DSA) experience longer wait times, increased rates of rejection, and decreased graft survival compared to non-sensitized recipients. Here we examined the outcomes of HLA sensitized pediatric patients who received IVIG and Rituximab desensitization therapy prior to receiving kidney transplants.

PATIENTS AND METHODS

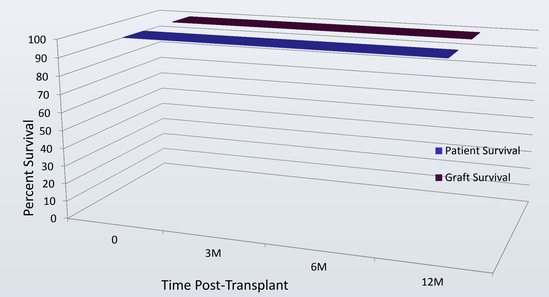
- Records of All Pediatric Kidney Transplant Recipients Age 18 and Younger Were Included in Analysis between September 2008 and January 2012
- All Highly Sensitized Pediatric Recipients received desensitization therapy using IVIG and Rituximab (IVIG 2gram/kg x2, Rituximab 375mg/m^2 x1.)
- All Recipients Received Alemtuzumab (Campath®) and IVIG for induction,
- All Recipients Received Similar Maintenance Immunosuppression with Tacrolimus, Mycophenolate, and Steroids
- 1 year Patient and Graft Survival, Acute Rejection and Viral Infection Rates were Examined

TREATMENT PROTOCOL

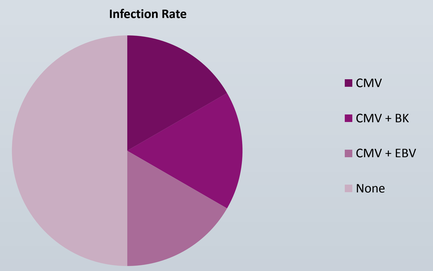


RESULTS

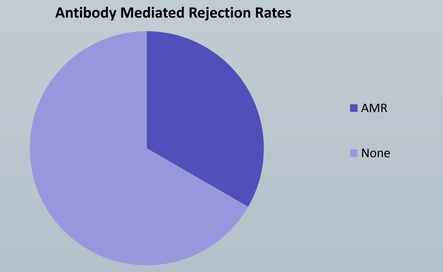
Patient & Graft Survival in Highly-HLA Sensitized Pediatric Renal Allograft Recipients



Infection Rates in Highly-HLA Sensitized Pediatric Renal Allograft Recipients



Antibody Mediated Rejection Rates in Highly-HLA Sensitized Pediatric Renal Allograft Recipients



CONCLUSIONS

- Desensitization with a combination of IVIG and Rituximab with alemtuzumab induction allows for successful transplantation in highly sensitized pediatric kidney transplant recipients.
- Following desensitzation treatment, there was 100% patient and graft survival at 1 year post transplant.
- Even though the risk of AMR is high, treatment of AMR stabilized renal function.