

# HIGHLY SENSITIZED PEDIATRIC PATIENTS RECEIVING KIDNEY TRANSPLANT - DESENSITIZATION STRATEGIES



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## INTRODUCTION

kidney transplantation (KT) is the optimal treatment for children with end stage renal disease (ESRD). Sensitization with development of a broad-spectrum of anti-HLA antibodies as a result of previous KT or transfusions is an increasing problem, associated with decreased access to organs, increased waiting times on dialysis, risk of death whilst on the waiting list, higher healthcare costs and poorer outcomes for subsequent grafts. Desensitization protocols have improved the rates of transplantation in highly sensitized adult populations and are generally well tolerated.

We intend to describe the outcome of two highly sensitized adolescents submitted to desensitization protocol and KT.

## CASE REPORTS

### Case 1

- 15 years-old boy
- ESRD due to neurogenic bladder (myelomeningocele)
- Peritoneal dialysis since 2007
- Cystoplasty and **first KT (deceased donor) in 2009**.
- Transplantectomy at day 1 (thrombosis).
- Homozygous carrier mutation plasminogen activator-1
- Transfer to hemodialysis in 2010 due to volume control issues.
- Second KT evaluation (2011):**
  - ✓ Donor: 22 years-old woman, living-related kidney donor, ABO compatible
  - ✓ Panel reactive antibody luminex (PRA) of 50%
  - ✓ **Positive donor-specific antibodies (DSA), anti-B45 mean fluorescein intensity (MFI) = 80000.**
  - ✓ Cytotoxic crossmatch was negative but **positive flow cytometry crossmatch.**

**High DSA level  
Positive flow cytometry XM**

### Case 2

- 15 years-old boy
- ESRD due to congenital obstructive uropathy
- Peritoneal dialysis since 2012
- First KT (deceased donor) in 2013.**
- Transplantectomy at day 2 (thrombosis).
- Peritoneal dialysis re-start.
- Second KT evaluation (2015):**
  - ✓ Deceased kidney donor, ABO compatible
  - ✓ **Calculated PRA of 97%**
  - ✓ **Positive DSA: anti-DR 15 (MFI = 9388), A68 (MFI = 3091 MFI)**

**PRA > 80%  
High DSA level**

**High-risk transplant**

### Desensitization protocol:

- Single Rituximab infusion 375 mg/m<sup>2</sup>
- Plasmapheresis
- Intravenous immunoglobulin 2g/kg (divided in four doses)

### Immunosupresion protocol:

- Induction therapy: Thymoglobulin
- Triple maintenance immunosuppression:  
Tacrolimus, Mycophenolate mofetil, Prednisolone

After 8 and 4 years of follow-up, respectively, both patients have stable renal allograft function and no rejection episode to report.

## DISCUSSION

We undertook effective patient desensitization enabling successful KT of two highly sensitized kidney recipients from their HLA-antibody-incompatible donors. Our protocol may be a safe option with no rejection episodes and good long-term renal outcome.