Acute Humoral Rejection in an Infant After Heart Transplantation: Uncommon But Possible

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INTRODUCTION

- *Acute humoral rejection* in the pediatric population after heart transplant ranges between 35-59%
- Risk factors include congenital heart diseases, positive crossmatch, prior transplantation, female gender, blood transfusions, and high panel reactive antibodies.
- To our knowledge, humoral rejection of a cardiac allograft during infancy has not been reported in the absence of risk factors.

CASE PRESENTATION

Figure 1. *Timeline.*

4-months old, boy
Heart failure symptoms.
Echocardiogram:
- LV ejection fraction: 8%.
- Severe LV dilation.

PRA: 0%
Maintained on *milrinone*.

→ *3-months*

Orthotopic Heart Transplant
- **PRA**: 0% (1 day before)
- O+/O+, CMV -/-, EBV +/-
- Prospective cross-match (-)
- *Ischemia time*: 104 m.
- *Discharged*: 3 weeks PO.
- Tacrolimus, mycophenolate & prednisone.

→ *3-months*

Echocardiogram:
- Concentric LV hypertrophy.

Rx: Tacrolimus → Cyclosporine.

❑ ***Third control biopsy***:
- Grade 2 Antibody mediated rejection.
- Grade 1R acute cellular rejection.

Figure 2. Initial rejection C4d+ pattern (A) and hematoxylin & eosin staining (B).

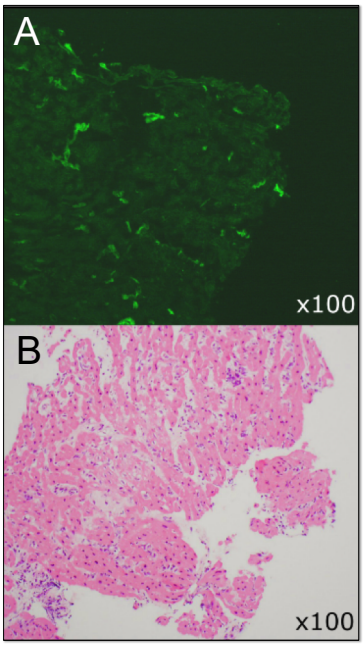

Figure 3. Latest biopsy C4d+ pattern (A, x200) and hematoxylin & eosin staining (B, x100).

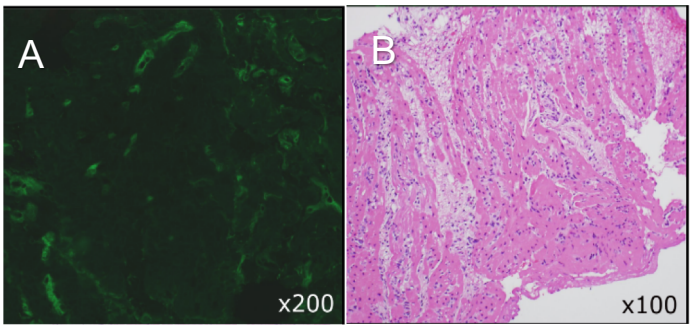

Table 1. *Management of initial rejection.*

Pre-treatment	**Treatment**		*Post-treatment*
PRA I: 20%	*Methylprednisolone.* *Anti-thymocyte globulin.*	10mg/kg q8h x 4 doses 4 doses	**PRA I:** 0%
PRA II: 90%	*Rituximab.* *Plasmapheresis.*	375 mg/m² x 1 dose 5 rounds	**PRA II:** 19%

Table 2. *Management of subsequent rejection episodes (4, 5 and 6 months)*

Variable	*Second*	*Third*	*Fourth*
Hospital days	*14*	9	*11*
Pulse steroids	Mycophenolate 10 mg/kg q 8 hrs x 4 doses	Mycophenolate 10 mg/kg q8hrs x 4 doses	None
IVIG	1 g/kg x 1 dose	1 g/kg x 1 dose	None
Plasmapheresis	Days 1-3 followed by ATG 1.5 mg/kg Days 4-5 followed by IVIG 100 mg/kg and 1 g/kg respectively.	None	None
Rituximab	None	375 mg/m² x 1 dose	None
Bortezomin	None	None	0.7 mg/m² q72 h x 4 doses
PRA I	**34%**	**53%**	**17%**
PRA II	**100%**	**93%**	**96%**

Currently 9-months post OHT,
Current medication:
- Amlodipine 4 mg daily
- Cyclosporine 80 mg q 8h
- Prednisolone 2.4 mg daily
- Sirolimus 0.3 mg daily

Latest biopsy.
- *Persistent celular rejection.*
- *Markedly decreased humoral rejection.*

CONCLUSION

To our knowledge, this is the *first report of acute humoral rejection* in an infant without pre-transplant risk factors.
Close follow-up and a high degree of suspicion should be maintained, even in the absence of risk factors.