Concurrent cultured thymus tissue implantation & orthotopic heart transplantation: a case report on the first clinical experience

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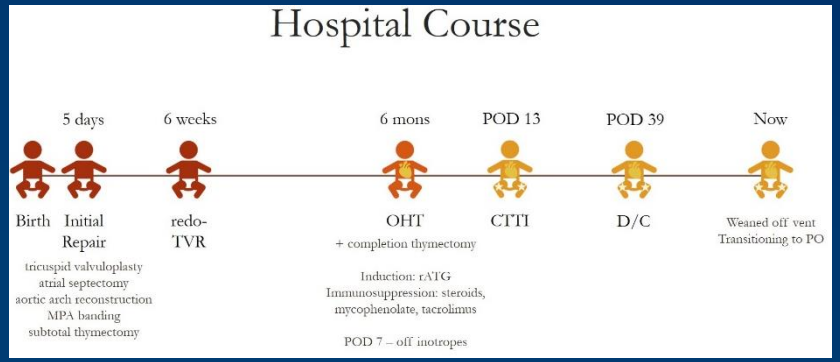
Introduction

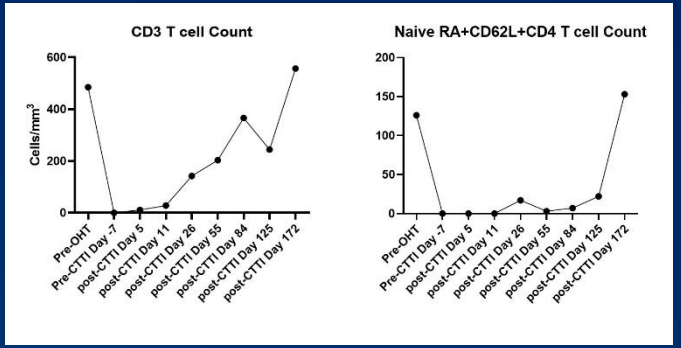
- Concurrent cultured thymus tissue implantation (CTTI) and orthotopic heart transplantation (OHT) has been proposed as a pathway to develop transplant tolerance.
- CTTI has been used safely and successfully to treat DiGeorge's anomaly, but has never been attempted in conjunction with OHT.

Methods

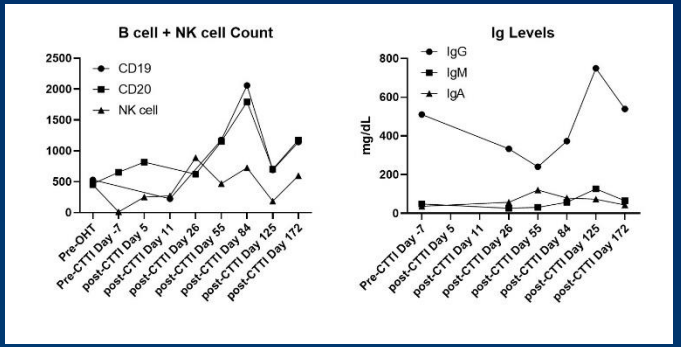
- Recipient is a 5 month-old male with DORV, TGA, severe TR, VSD, & aortic arch hypoplasia
- Developed heart failure & was diagnosed with T cell deficiency of unknown etiology.
- OHT and completion thymectomy at 6 months of age.
- Donor thymus obtained from the heart donor was cultured and implanted 13 days after OHT.



Results



On post-CTTI day 266, he demonstrated full immune reconstitution with lymphocyte enumeration of 1,808 CD3 T cells/mm3 and 708/mm3 naïve RA+CD62L+CD4+ T cells.



Endomyocardial biopsy on post-OHT day 83 showed no signs of acute cellular rejection (ISHLT 2004 Grade 0R) nor antibody mediated rejection (pAMR 0).

Conclusions/Implications

- In the world's first CTTI and OHT co-transplant, we have demonstrated immune reconstitution in the presence of standard heart transplant immunosuppression.
- This case will allow us to test for the development of tolerance with this approach, as immunosuppression is fully weaned.

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