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INTRODUCTION

- Paediatric corneal transplants have higher rates of graft rejection than in adults.¹
- Disparity between donor and recipient HLA is main basis for immune-mediated graft rejection.²
- HLA matching of donor corneal grafts is not routinely performed due to previous adult trials.³
- Prior findings are not generalizable, and **no data exists on the immune profile of paediatric keratoplasty patients.**

PURPOSE

Our goal was to determine the prevalence and characteristics of anti-HLA antibodies in children post-keratoplasty with prior graft rejection episodes compared to those without rejection.

METHODS

- Prospective, cross-sectional, case-control pilot study (approved by Hospital for Sick Children REB)

Identify paediatric patients with history of corneal transplantation with & without rejection episode(s)

Enroll 5-10 patients in each group

Inclusion criteria

Age ≤18 years
History of penetrating keratoplasty (PKP)
All indications for transplant
≥6 months postop follow up

Exclusion criteria

Systemic immune condition and/or immunosuppression
Previous blood transfusion
Other organ transplant
Previous pregnancy

Collect blood for HLA typing & anti-HLA antibody testing

Perform descriptive & comparative statistical analysis

Primary outcomes

- 1) Prevalence of anti-HLA alloantibodies (class I and/or II)
- 2) Difference between graft rejection & rejection-free groups

Secondary outcomes

- 1) Anti-HLA antibody typing profile & specificity
- 2) Calculated panel reactive antibodies (cPRA)

RESULTS

- Enrolled 10 patients with history of graft rejection/failure, 5 patients without graft rejection/failure.

	History of graft rejection/failure (N = 10)	No graft rejection/failure (N = 5)
Number of grafts per patient	2.9 ± 1.9	1.2 ± 0.4
Age at first transplant (mo)	18.3 ± 35.2	25.6 ± 27.3
Time since first transplant (mo)	107.4 ± 48.7	157.0 ± 35.2
Age at last transplant (mo)	52.4 ± 45.0	25.8 ± 27.2
Time since last transplant (mo)	73.5 ± 55.8	156.8 ± 35.4
Age at last rejection (mo)	97.4 ± 46.4	---
Time since last rejection (mo)	28.6 ± 30.9	---

Table: Demographics of patients within each group. Values are given as mean ± standard deviation.

- Prevalence of anti-HLA antibodies: 6/10 patients with graft rejection vs. 1/5 without rejection
- Average cPRA (quantitative measurement of sensitization): 18.9% with history of graft rejection vs. 1.5% without rejection
- Average total number of specific anti-HLA alleles: 2.5 with history of graft rejection vs. 0.6 without rejection

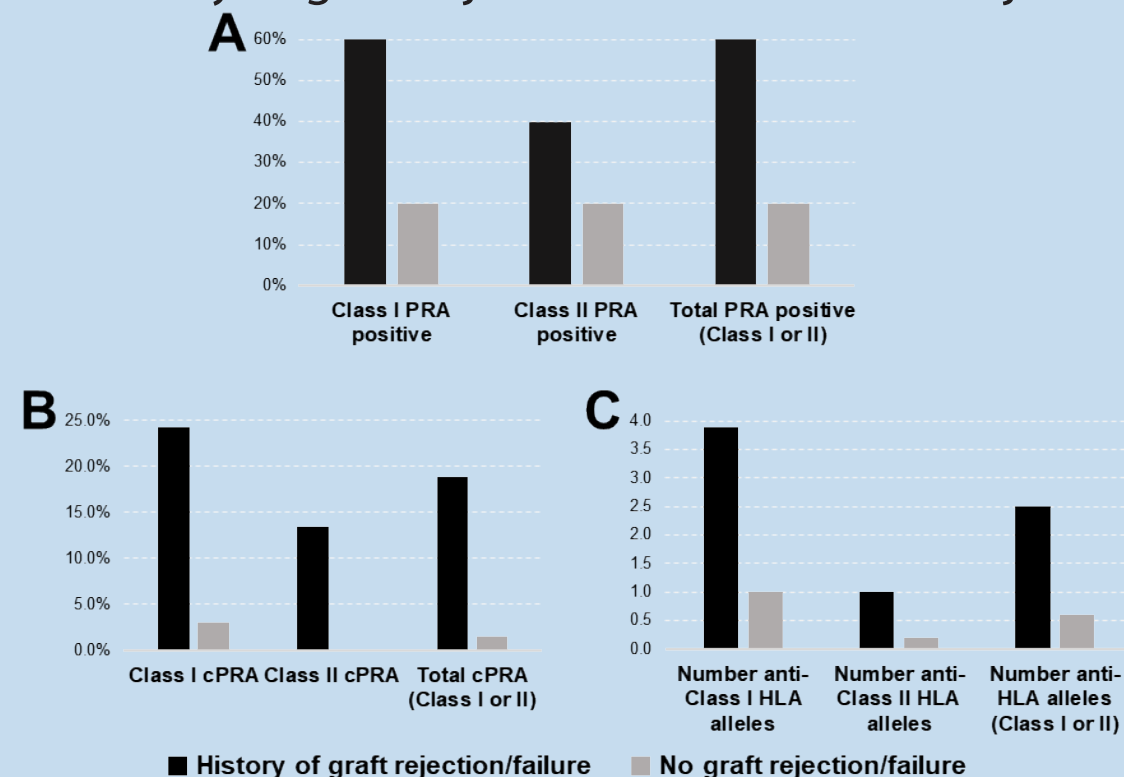


Figure: A) Prevalence (%) of class I, II, and total anti-HLA antibodies; B) Average cPRA (% of deceased organ donors estimated crossmatch incompatible); C) Average number of specific anti-HLA alleles in patients with (black bar) and without (gray bar) history of graft rejection

CONCLUSIONS

- Preliminary results show a trend toward increased prevalence of anti-HLA antibodies in paediatric keratoplasty patients with history of graft rejection.
- Donor-host HLA matching (especially to HLA class I) may have more importance in paediatric corneal transplantation.
- Larger, prospective studies are necessary to determine if HLA matching affects long-term graft survival in paediatric patients.

REFERENCES

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DISCLOSURES & CONTACT

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No disclosures.

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