



The key to Immunologic compatibility in the highly sensitized -The combined role of understanding Anti HLA antibody and HLA allelic prevalences.

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Sam Arul Doss R, Divya M, Gayathiri KC, Dolly D

Department of Transfusion Medicine and Immunohematology, Christian Medical College, Vellore

BACKGROUND

- ❖ Finding suitable donors for highly sensitized transplant patients is challenging, even with advanced HLA typing and anti-HLA antibody detection methods.
- ❖ **Highly sensitized patients develop antibodies** against certain HLA antigens, which limits their donor options.
- ❖ While current tests can precisely identify these antibodies and HLA types, a clearer **understanding of which HLA antibodies and antigens are most common could improve compatibility predictions.**
- ❖ By recognizing these patterns, we may **unlock ways to expand donor availability**, allowing for more successful transplants for those who are highly sensitized.

AIM & OBJECTIVE

To evaluate the **frequency of allele-specific anti-HLA antibodies and the prevalence of the corresponding HLA alleles** to assess the clinical probability of finding an antigen negative donor.

MATERIALS & METHODS

- ❖ A retrospective analysis - the frequency of antibody specificities - in 15 highly sensitized patients.
- ❖ A total of 3050 samples - High resolution HLA typing were analyzed to determine HLA allele frequency.

Study participants

Software tools

- ❖ In-house built software (Database-Driven HLA Matching Algorithm with Transaction-Safe CRUD Operations) designed by institutional IT team –
- ❖ The HLA allele frequency were determined.

Anti HLA Antibody detecting platform

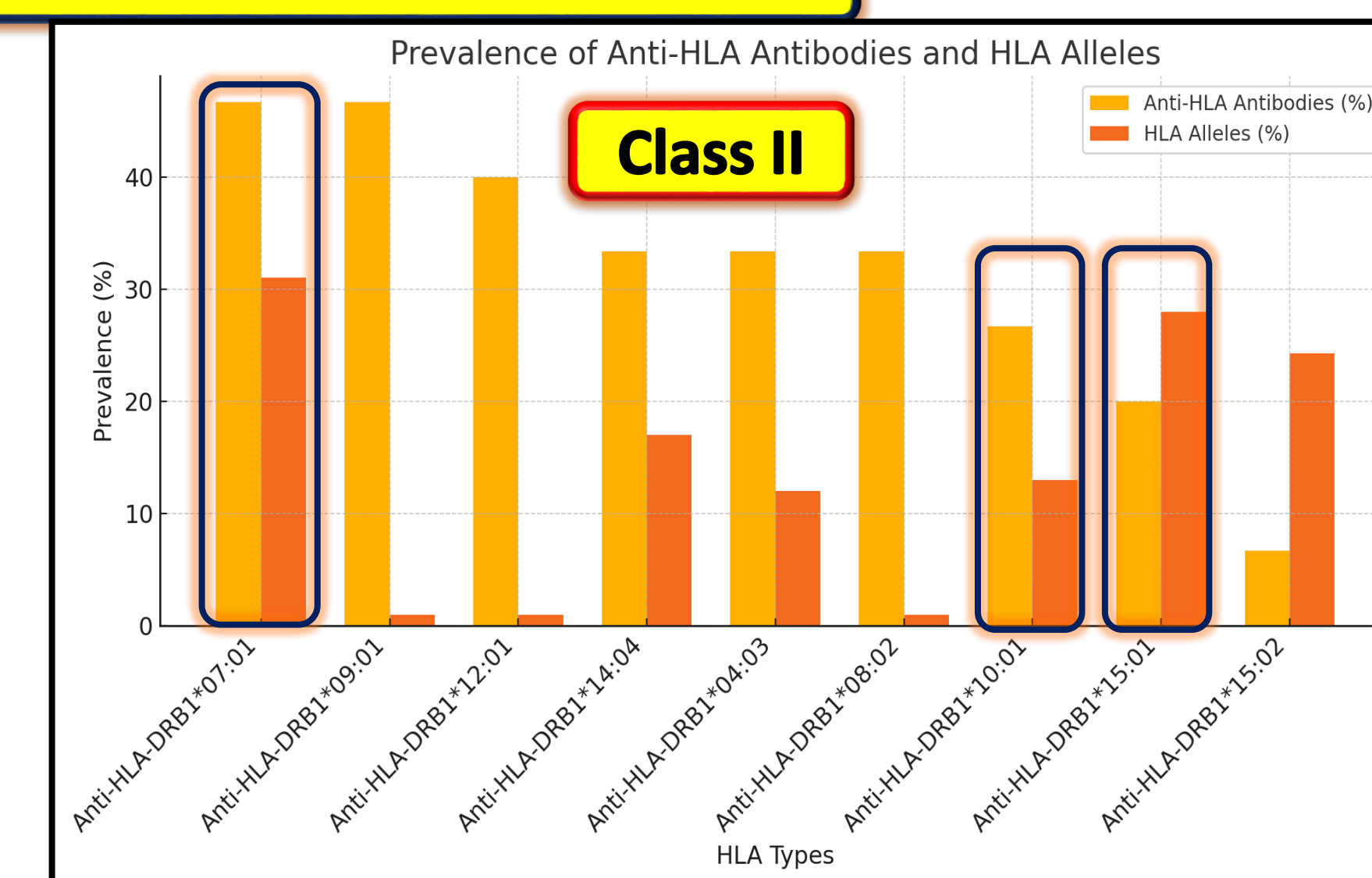
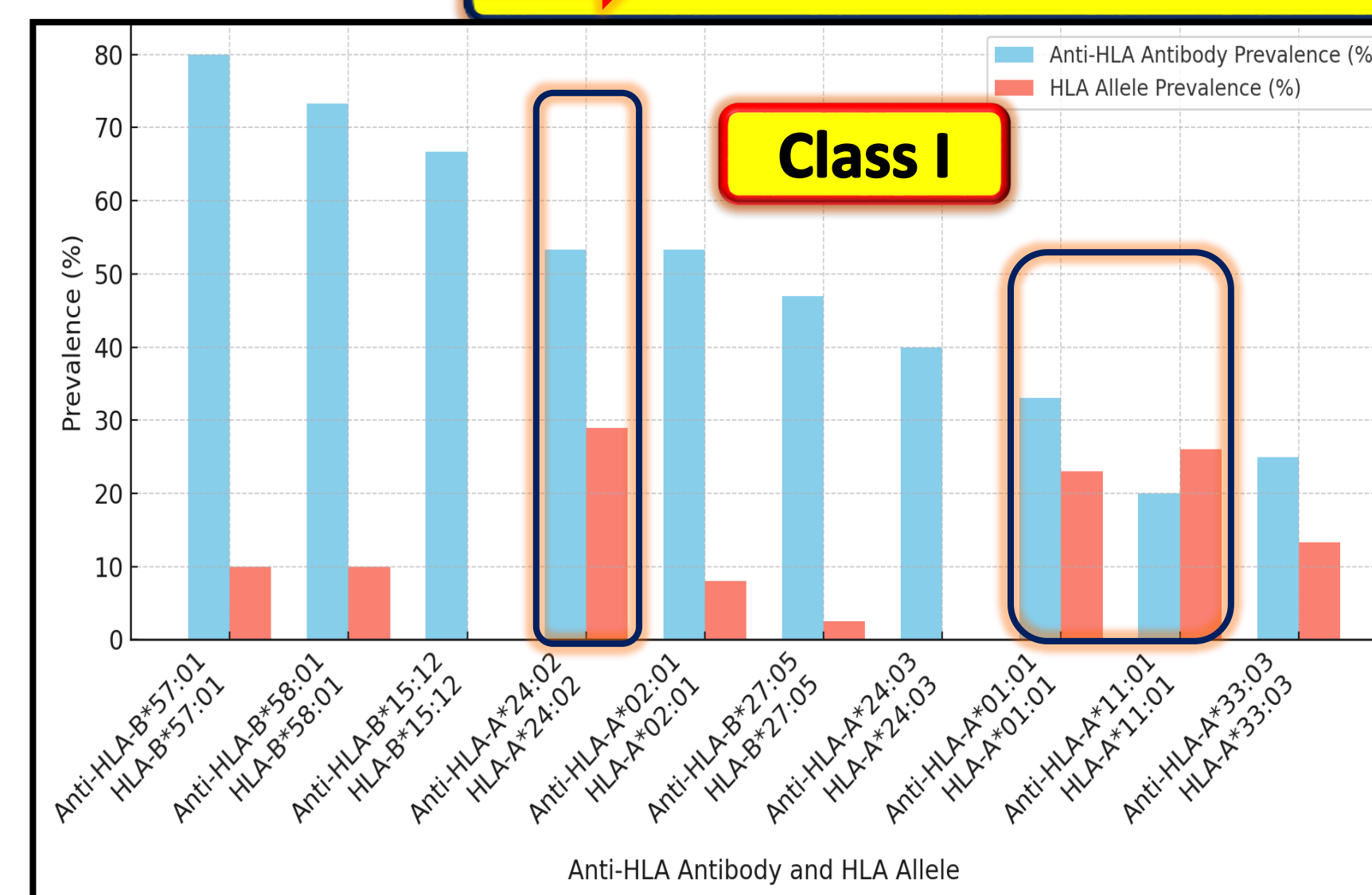
- ❖ Luminex Single Bead Antigen Assay (SAB).
- ❖ MFI (Mean Fluorescence Intensity) >1500 considered positive.

HLA typing platform

- ❖ High-resolution HLA typing - MIA FORA kits (Illumina MiniSeq platform).
- ❖ HLA-A*, HLA-B*, HLA-C*, HLA-DRB1*, HLA-DQB1* and HLA-DPB1* genes were analyzed.

RESULTS

Prevalence of Anti HLA antibodies and HLA alleles



DISCUSSION & CONCLUSION

- ❖ Our results highlight the various combinations of **antibody frequency and allelic prevalence in Class I, HLA-A*24:02 which shows high prevalence (29%)** and , suggesting strong immune engagement.
- ❖ Conversely, **HLA-B*15:12, despite its high frequency (66.67%),** has limited clinical relevance due to its very low prevalence (0.29%).
- ❖ **In Class II, HLA-DRB1*07:01** plays a significant role in immune recognition with both **high frequency (46.67%) and prevalence (31%)**. On the other hand, **HLA-DRB1*09:01 and HLA-DRB1*12:01, despite their high frequencies, have low prevalence (1%), indicating minimal immune significance.**
- ❖ Understanding these various combinations in our population is essential for predicting the chances of finding a suitable donor in highly sensitized individuals.

REFERENCES

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