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Poster presentation

P08-04. The role of class I HLA-B and HLA-Cw in disease progression and maternal-infant HIV-1 transmission in a South African population

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Background

Human leukocyte antigens play an integral role in the cytotoxic T-cell pathway and serve as ligands for natural killer cell receptors. We have investigated the role of two HLA class I genes on disease progression and maternal-infant HIV-1 transmission using 222 South African mother-infant pairs recruited as part of a mother-to-infant HIV-1 transmission study.

Methods

High resolution genotyping of HLA class I B and Cw loci was performed using a sequence-based typing strategy and alleles were collapsed to a four-digit assignment for purpose of analysis.

Results

B*5802 and Cw*0602 were significantly associated with high viral load (VL) (P = 0.038 and P = 0.017 respectively) and low CD4 count (P < 0.001 and P = 0.005 respectively). These two alleles are in linkage disequilibrium (D' = 1.00; P < 0.001) and the most prevalent haplotype amongst Black South Africans (f = 9.94%). The B*5802-Cw*0602 haplotype was also significantly associated with low CD4 count (P = 0.001) and showed a trend with high VL (P = 0.073). Furthermore, B*4501 showed a trend with high VL (P = 0.086) and low CD4 count (P = 0.062). B*4201 was significantly associated with low VL (P = 0.045) and another prevalent haplotype, B*4201-Cw*1701 (f = 9.65%), was significantly associated with low VL (P = 0.049). The Cw allotype groups (C1&C2) showed no significant association with markers of disease severity, whereas, contrary to other studies, Bw4/Bw4 homozygosity was significantly associated with high VL (P = 0.038) and low CD4 count (P = 0.015). B*0801 showed a trend (P = 0.064) of lower representation amongst infected infants compared to exposed uninfected infants. Transmitting mothers had significantly higher representation of B*1402 (P = 0.034) and a trend of lower representation of B*4201 (P = 0.082) compared to non-transmitting mothers. No Cw* alleles or allotype groups showed significant association with HIV-1 transmission.

Conclusion

This study highlights the different roles played by HLA in disease progression and maternal-infant HIV-1 transmission and also serves as a basis for future work that will study the role of KIR-HLA in the same contexts.