Immune Responses In HIV – 1 Discordant Couples in Western Kenya

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Abstract

Background: A few people remain persistently seronegative despite frequent exposure to HIV – 1 via sexual or systemic routes. The mechanism of this apparent resistance to HIV – 1 infection is not clearly known.

Objective: This study assessed cellular immune responses to HIV – 1 in terms of $CD8^+$, $CD4^+$ T, $CD56^+/16^+$ and $CD19^+$ cell proliferation and function as indicated by Th1/Th2 cytokine expression in heterosexual HIV – 1 discordant and concordant positive/negative couples.

Design: Cross sectional prospective study.

Study population: Sixty-six (66) subjects comprising of discordant, concordant positive (untreated with CD4 $\geq$ 250-cells/μL) and concordant negative controls were recruited from western Kenya.

Method: Blood samples were drawn in EDTA vacuitaners by venipuncture of antecubital vein. Complete blood count (CBC), Lymphocyte phenotypes and cytokine levels analysis were done to assess cellular and functional immune responses to HIV – 1 using Beckman™ coulter and Facscalibur™ respectively.

Results: Discordant uninfected females had mean, cells/μL, $CD4^+$ (727), $CD8^+$ (1035), $CD56^+/16^+$ (295) $CD19^+$ (298) and Th/Ts (1.4) compared to concordant negative females $CD4^+$ (923) $CD8^+$ (591), $CD56^+/16^+$ (857), $CD19^+$ (352) and Th/Ts (1.6) respectively. Discordant index females had higher %CD4 and Th/Ts than concordant positive females 28.0%, 18.3% p=0.024, and 0.7, 0.4 p=0.016 respectively but lower $CD8^+$ 711.0, 1131 p=0.007. Female partners had higher $CD19^+$ counts and % than index females and males. Mean Lymphocyte, cells/μL, were positively correlated with HIV – 1 RNA and cytokine levels (r=0.371, r=0.800) in discordant individuals but negatively correlated in concordant positive participants.

Conclusion: These findings indicate $CD4^+$, $CD8^+$, $CD56^+/16^+$ and $CD19^+$ immune specific and non-specific responses to chronic exposure to HIV – 1 and possible immunological protection among discordant individuals. Studies using HIV –1 specific antigen and lymphocytes targets, in larger sample sized study is recommended.