

HIV-1-specific enzyme-linked immunosorbent spot assay responses in HIV-1-exposed uninfected partners in discordant relationships compared to those in low-risk controls.

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Abstract

A number of studies of highly exposed HIV-1-seronegative individuals (HESN) have found HIV-1-specific cellular responses. However, there is limited evidence that responses prevent infection or are linked to HIV-1 exposure. Peripheral blood mononuclear cells (PBMC) were isolated from HESN in HIV-1-discordant relationships and low-risk controls in Nairobi, Kenya. HIV-1-specific responses were detected using gamma interferon (IFN- γ) enzyme-linked immunosorbent spot (ELISpot) assays stimulated by peptide pools spanning the subtype A HIV-1 genome. The HIV-1 incidence in this HESN cohort was 1.5 per 100 person years. Positive ELISpot responses were found in 34 (10%) of 331 HESN and 14 (13%) of 107 low-risk controls (odds ratio [OR] = 0.76; P = 0.476). The median immunodominant response was 18.9 spot-forming units (SFU)/10(6) peripheral blood mononuclear cells (PBMC). Among HESN, increasing age (OR = 1.24 per 5 years; P = 0.026) and longer cohabitation with the HIV-1-infected partner (OR = 5.88 per 5 years; P = 0.003) were associated with responses. These factors were not associated with responses in controls. Other exposure indicators, including the partner's HIV-1 load (OR = 0.99 per log(10) copy/ml; P = 0.974) and CD4 count (OR = 1.09 per 100 cells/ μ l; P = 0.238), were not associated with responses in HESN. HIV-1-specific cellular responses may be less relevant to resistance to infection among HESN who are using risk reduction strategies that decrease their direct viral exposure.