

Abstract:

The goal of the present study was to determine whether there were HIV-1 specific cellular immune responses among a subgroup of women within a cohort of Nairobi prostitutes (n = 1800) who, despite their intense sexual exposure to HIV-1, are epidemiologically resistant to HIV-1 infection. Of the 80 women defined to be resistant, 24 were recruited for immunological evaluation. The HIV-1-specific T-helper responses were determined by IL-2 production following stimulation with HIV-1 envelope peptides and soluble gp120. Cytotoxic T lymphocyte responses were determined by lysis of autologous EBV-transformed B cell lines infected with control vaccinia virus or recombinant vaccinia viruses containing the HIV-1 structural genes env, gag and pol. Resistant women had significantly increased HIV-1 specific T-helper responses, as determined by in vitro IL-2 production to HIV-1 envelope peptides and soluble glycoprotein 120, compared with low-risk seronegative and HIV-1-infected controls ($P \leq 0.01$, Student's t-test). Seven of the 17 (41%) resistant women showed IL-2 stimulation indices ≥ 2.0 . HIV-1-specific CTL responses were detected among 15/22 (68.2%) resistant women compared with 0/12 low-risk controls (Chi-squared test, $P < 0.001$). In the two resistant individuals tested, the CTL activity was mediated by CD8+ effectors. Many HIV-1-resistant women show evidence of HIV-1-specific T-helper and cytotoxic responses. These data support the suggestion that HIV-1-specific T-cell responses contribute to protection against HIV-1 infection.