

Hormonal contraception, vitamin A deficiency, and other risk factors for shedding of HIV-1 infected cells from the cervix and vagina.

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Abstract:

BACKGROUND: Factors that influence shedding of HIV-1 infected cells in cervical and vaginal secretions may be important determinants of sexual and vertical transmission of the virus. We investigated whether hormonal contraceptive use, vitamin A deficiency, and other variables were risk factors for cervical and vaginal shedding of HIV-infected cells. **METHODS:** Between December, 1994, and April, 1996, women who attended a municipal sexually transmitted diseases (STDs) clinic in Mombasa, Kenya, and had previously tested positive for HIV-1, were invited to take part in our cross-sectional study. Cervical and vaginal secretions from 318 women were evaluated for the presence of HIV-1 infected cells by PCR amplification of gag DNA sequences. **FINDINGS:** HIV-1 infected cells were detected in 51% of endocervical and 14% of vaginal-swab specimens. Both cervical and vaginal shedding of HIV-1 infected cells were highly associated with CD4 lymphocyte depletion ($p = 0.00001$ and $p = 0.003$, respectively). After adjustment for CD4 count, cervical proviral shedding was significantly associated with use of depot medroxyprogesterone acetate (odds ratio 2.9, 95% CI 1.5-5.7), and with use of low-dose and high-dose oral contraceptive pills (3.8, 1.4-9.9 and 12.3, 1.5-101, respectively). Vitamin A deficiency was highly predictive of vaginal HIV-1 DNA shedding. After adjustment for CD4 count, severe vitamin A deficiency, moderate deficiency, and low normal vitamin A status were associated with 12.9, 8.0, and 4.9-fold increased odds of vaginal shedding, respectively. Gonococcal cervicitis (3.1, 1.1-9.8) and vaginal candidiasis (2.6, 1.2-5.4) were also correlated with significant increases in HIV-1 DNA detection, but Chlamydia trachomatis and Trichomonas vaginalis were not. **INTERPRETATION:** Our study documents several novel correlates of HIV-1 shedding in cervical and vaginal secretions, most notably hormonal contraceptive use and vitamin A deficiency. These factors may be important determinants of sexual or vertical transmission of HIV-1 and are of public health importance because they are easily modified by simple interventions. **PIP:** Correlates of HIV-1 shedding in cervical and vaginal secretions were investigated in a cross-sectional study of 318 women previously diagnosed with HIV who presented to a sexually transmitted disease clinic in Mombasa, Kenya, during 1994-96. HIV-infected cells were detected in 51% of endocervical and 14% of vaginal swab specimens. Both cervical and vaginal shedding of HIV-1 infected cells were highly associated with CD4 lymphocyte depletion. After adjustment for CD4 count, cervical proviral shedding was significantly associated with use of depo medroxyprogesterone acetate (odds ratio [OR], 2.9; 95% confidence interval [CI], 1.5-5.7) and of low- and high-dose oral contraceptives (OR, 3.8; 95% CI, 1.4-9.9 and OR, 12.3; 95% CI, 1.5-101, respectively). After adjustment for CD4 count, severe vitamin A deficiency, moderate deficiency, and low-normal vitamin A status were associated with 12.9, 8.0, and 4.9-fold increased odds of vaginal shedding, respectively. Finally,

gonococcal cervicitis (OR, 3.1; 95% CI, 1.1-9.8) and vaginal candidiasis (OR, 2.6; 95% CI, 1.2-5.4), but not *Chlamydia trachomatis* and *Trichomonas vaginalis*, were correlated with significant increases in HIV-1 DNA detection. These risk factors, easily modifiable by simple interventions, may be important determinants of sexual or vertical HIV transmission.