

Prediction of Cervical Human Papillomavirus (HPV) Infection and Disease by Magnitude of HIV-1 Plasma RNA level

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HPV infections are very common among HIV-infected women, and infection with oncogenic (high risk, HR) HPV types is highly associated with cervical cancer. To characterize further the relationships between HPV and HIV infections, we evaluated plasma HIV-1 RNA as a predictor of HPV infection and disease among women attending an HIV/AIDS Treatment Center. At study entry, a complete history and physical examination was performed and specimens were obtained for cytologic and virologic testing. Pap smears were reported according to the Bethesda classification system, HPV DNA was detected using the Digene hybrid capture assay, and plasma HIV-1 RNA copy number was determined using Roche's Amplicor HIV-1 Monitor assay. Of the 68 women currently enrolled, 35 are African-American, 17 are Latino, and 16 are Caucasian. The median age is 37 years and the median CD4 count is 382.

Thirty-three of 68 (49%) specimens were positive for HPV DNA; 26 of these 33 (79%) contained HRHPV DNA. Of these 26 women, 12 had Pap smears that demonstrated squamous intraepithelial lesions (SIL) compared to only 3 cases of SIL among patients without detectable HRHPV DNA ($P < 0.001$). Among 51 women with plasma HIV-1 RNA measurements at baseline, 32 (63%) had $>10,000$ copies/ml. Within this group, 19 (59%) had HRHPV DNA detected, compared to only 2 (11%) among patients with $<10,000$ HIV-1 plasma RNA copies/ml ($p < 0.001$). In addition, when Pap smear results were considered directly, without regard for HPV DNA status, 18 of 32 (56%) women with $>10,000$ HIV-1 RNA copies/ml had abnormal smears compared to only 4 of 19 women (21%) with $<10,000$ copies/ml ($p = 0.03$). HIV-infected women with plasma HIV-1 RNA levels $>10,000$ copies/ml are at high risk for cervical HRHPV infection and for cervical cytological abnormalities. Aggressive gynecological monitoring should be performed in this patient population.