Abstract

BACKGROUND: Human papillomavirus (HPV) and HIV are each responsible for a considerable burden of disease. Interactions between these infections pose substantial public health challenges, especially where HIV prevalence is high and HPV vaccine coverage low.

METHODS: Between July 2005 and January 2006, a cross-sectional community-based survey in Mombasa, Kenya, enrolled female sex workers using snowball sampling. After interview and a gynaecological examination, blood and cervical cytology samples were taken. Quantitative real-time PCR detected HPV types and viral load measures. Prevalence of high-risk HPV was compared between HIV-infected and -uninfected women, and in women with abnormal cervical cytology, measured using conventional Pap smears.

RESULTS: Median age of the 820 participants was 28 years (inter-quartile range [IQR] = 24-36 years). One third of women were HIV infected (283/803; 35.2%) and these women were more likely to have abnormal cervical cytology than HIV-negative women (27%, 73/269, versus 8%, 42/503; P < 0.001). Of HIV-infected women, 73.3% had high-risk HPV (200/273) and 35.5% had HPV 16 and/or 18 (97/273). Corresponding figures for HIV-negative women were 45.5% (229/503) and 15.7% (79/503). After adjusting for age, number of children and condom use, high-risk HPV was 3.6 fold more common in HIV-infected women (95%CI = 2.6-5.1). Prevalence of all 15 of the high-risk HPV types measured was higher among HIV-infected women, between 1.4 and 5.5 fold. Median total HPV viral load was 881 copies/cell in HIV-infected women (IQR = 33-12,110 copies/cell) and 48 copies/cell in HIV-uninfected women (IQR = 6-756 copies/cell; P < 0.001). HPV 16 and/or HPV 18 were identified in 42.7% of LSIL (32/75) and 42.3% of HSIL (11/26) lesions (P = 0.98). High-risk HPV types other than 16 and 18 were common in LSIL (74.7%; 56/75) and HSIL (84.6%; 22/26); even higher among HIV-infected women. CONCLUSIONS: HIV-infected sex workers had almost four-fold higher prevalence of high-risk HPV, raised viral load and more precancerous lesions. HPV 16 and HPV 18, preventable with current vaccines, were associated with cervical disease, though other high-risk types were commoner. HIV-infected sex workers likely contribute disproportionately to HPV transmission dynamics in the general population. Current efforts to prevent HIV and HPV are inadequate. New interventions are required and improved implementation of existing strategies.