

Abstract:

A rigorous comparison of cervical cancer screening methods utilizing data on immune status, antiretroviral therapy (ART), and colposcopy-directed biopsy has not been performed among HIV-positive women. **METHODS::** Between June and November 2009, 500 HIV-positive women were enrolled at an HIV treatment clinic in Nairobi, Kenya, and underwent Papanicolaou (Pap) smear, Visual Inspection with Acetic Acid (VIA), human papillomavirus (HPV), and colposcopy-directed biopsy (gold standard). Positive Pap smear (ASCUS+, LSIL+, HSIL+), VIA, HPV, and their combinations were compared to CIN2/3+. Sensitivity, specificity, and AUC (sensitivity and 1-specificity) were compared using pairwise tests and multivariate logistic regression models that included age, CD4 count, and ART duration. **RESULTS::** Of 500 enrolled, 498 samples were collected. On histology, there were 172 (35%) normal, 186 (37%) CIN1, 66 (13%) CIN2, 47 (9%) CIN3, and 27 (5%) indeterminate. Pap (ASCUS+) was the most sensitive screening method (92.7%), combination of both Pap (HSIL+) and VIA positive was the most specific (99.1%), and Pap (HSIL+) had the highest AUC (0.85). In multivariate analyses, CD4 count ≤ 350 cells/mm was associated with decreased HPV specificity ($p=0.002$); ART duration <2 years was associated with decreased HPV ($p=0.01$) and VIA ($p=0.03$) specificity; and age <40 years was associated with increased VIA sensitivity ($p<0.001$) and decreased HPV specificity ($p=0.005$). **CONCLUSIONS::** Pap smear is a robust test among HIV-positive women regardless of immune status or ART duration. Results should be cautiously interpreted when using HPV among those younger, immunosuppressed, or on ART <2 years, and when using VIA among those ≥ 40 years.