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Abstract Title

Comparison of HPV Vaginal versus Cervical Sampling for High-Risk HPV Detection and Association with Cervical Lesion Severity

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Background

Cervical cancer affects approximately 600,000 women globally each year and is primarily caused by carcinogenic HPV genotypes. Improving early detection benefits maternal and child health. High-risk HPV (hrHPV) screening through self-collected vaginal samples may improve accessibility and early detection compared to traditional cytology-based clinical screening.

Objective

We aimed to determine whether vaginal and cervical samples show similar HPV strain presence at the genotype and HPV risk levels. We investigated cervical lesion presence to understand if vaginal swabs or HPV typing are appropriate methods for cervical cancer screening.

Methods

We analyzed 162 paired cervical and mid-vaginal specimens from 86 individuals referred to a colposcopy clinic following an abnormal Pap test. Participants were followed every 6–12 months for up to 3 years. HPV genotypes were determined by sequencing at the National Microbiology Laboratory.

Results

At baseline, 78% of participants had detectable HPV, including 73% with hrHPV in cervical specimens and 70% in vaginal specimens. Across all study visits, 11.7% showed differences in HPV genotype detection between paired cervical and vaginal specimens; however, only 6.8% differed when genotypes were categorized as high- or low-risk. No significant differences were observed in the prevalence of HPV strains detected between cervical and vaginal specimens. Similarly, no significant differences in hrHPV detection were observed between cervical and vaginal specimens among individuals with no, low-, or high-grade cervical lesions.

Conclusion

Cervical and mid-vaginal specimens demonstrated strong concordance in HPV risk classification, vaginal sampling for hrHPV screening. Some individuals with previous abnormal cytology had no or only low-risk HPV, indicating that HPV-based screening may not identify all individuals currently captured by cytology. Conversely, hrHPV detection in the absence of cervical lesions may identify individuals requiring continued surveillance despite limited histological evidence of disease. Together, these findings highlight both the potential and limitations of hrHPV cervical cancer screening.