HPV-Based Screening Outperforms Cytology in Reducing Invasive Cervical Cancer
By Amy Orciari Herman

HPV-based cervical cancer screening lowers the risk for invasive carcinoma better than cytology-based methods, according to an analysis of data from four randomized trials.
The analysis, published in the Lancet, included more than 175,000 European women (aged 20-64) who had been assigned to HPV- or cytology-based screening. During roughly 7 years' follow-up, 107 invasive cervical cancers were identified.
Rates of invasive cancer did not differ between the two screening methods during the first 2.5 years' follow-up. After that, however, the rate was halved among those assigned to HPV-based screening. In addition, in an analysis limited to those with negative screening results at study entry, the rate was cut by 70% with HPV screening.
The benefit was greatest in women aged 30 to 34. Overall, 5-year intervals with HPV-based screening were more protective than 3-year intervals with cytologic screening.
Lancet article (Free abstract)
Background: NEJM Journal Watch coverage of guidelines on managing women with abnormal cervical screening results (Free)

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Efficacy of HPV-based screening for prevention of invasive cervical cancer: follow-up of four European randomised controlled trials

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Summary

Background

In four randomised trials, human papillomavirus (HPV)-based screening for cervical cancer was compared with cytology-based cervical screening, and precursors of cancer were the endpoint in every trial. However, direct estimates are missing of the relative efficacy of HPV-based versus cytology-based screening for prevention of invasive cancer in women who undergo regular screening, of modifiers (eg, age) of this relative efficacy, and of the duration of protection. We did a follow-up study of the four randomised trials to investigate these outcomes.

Methods

176 464 women aged 20—64 years were randomly assigned to HPV-based (experimental arm) or cytology-based (control arm) screening in Sweden (Swedescreen), the Netherlands (POBASCAM), England (ARTISTIC), and Italy (NTCC). We followed up these women for a median of 6·5 years (1 214 415 person-years) and identified 107 invasive cervical carcinomas by linkage with screening, pathology, and cancer registries, by masked review of histological specimens, or from reports. Cumulative and study-adjusted rate ratios (experimental vs control) were calculated for incidence of invasive cervical carcinoma.

Findings

The rate ratio for invasive cervical carcinoma among all women from recruitment to end of follow-up was 0·60 (95% CI 0·40—0·89), with no heterogeneity between studies (p=0·52). Detection of invasive cervical carcinoma was similar between screening methods during the first 2·5 years of follow-up (0·79, 0·46—1·36) but was significantly lower in the experimental arm thereafter (0·45, 0·25—0·81). In women with a negative screening test at entry, the rate ratio was 0·30 (0·15—0·60). The cumulative incidence of invasive cervical carcinoma in women with negative entry tests was 4·6 per 105 (1·1—12·1) and 8·7 per 105 (3·3—18·6) at 3·5 and 5·5 years, respectively, in the experimental arm, and 15·4 per 105 (7·9—27·0) and 36·0 per 105 (23·2—53·5), respectively, in the control arm. Rate ratios did not differ by cancer stage, but were lower for adenocarcinoma (0·31, 0·14—0·69) than for squamous-cell carcinoma (0·78, 0·49—1·25). The rate ratio was lowest in women aged 30—34 years (0·36, 0·14—0·94).

Interpretation

HPV-based screening provides 60—70% greater protection against invasive cervical carcinomas compared with cytology. Data of large-scale randomised trials support initiation of HPV-based screening from age 30 years and extension of screening intervals to at least 5 years.

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