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Cervical Cancer Screening: The Latest Research on the Impact of Different Cytology Methods

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Today we will be reviewing a publication from the Erasmus Medical Center in the Netherlands, to compare the relative effectiveness of liquid-based cytology with manually read conventional Pap smears in terms of atypical cytology classification and corresponding biopsy-confirmed cervical lesions.

This retrospective, population based cohort study was conducted with the nationwide network and registry of histology and cytology in the Netherlands PALGA database between January 2000 and March 2011. The study compared the use of BD's SurePath liquid-based cytology or Hologic's ThinPrep liquid-based cytology with the manually read conventional Pap smears as primary screening tests. The study population included over 3 million conventional smear results, consisting of roughly half SurePath Results and half ThinPrep results.

The main outcome measurement was the detection of atypical cervical cytology grade, and the biopsy-confirmation of cervical intraepithelial neoplasia (or CIN) as indicators of relative clinical performance.

The publication showed the following results:

- BD's SurePath™ Pap test was associated with a lower odds ratio to produce ASCUS or L-SIL results and an increased odds ratio to detect low grade CIN1 and CIN2 lesions compared to conventional smears
- Comparatively Hologic's ThinPrep Pap test was associated with a slightly higher odds ratio to produce ASCUS or L-SIL results and a decreased odds ratio to detect CIN3 and cervical cancer compared to conventional smears
- Additionally, BD SurePath™ Pap test was associated with an 12% increased odds ratio to detect H-SIL+ and a similar odds ratio to detect histology-confirmed CIN2+ lesions compared to conventional smears. In other words, SurePath H-SIL had the same positive predictive value of biopsy-confirmed detection of CIN2+ as the conventional smear.
- By contrast, Hologic ThinPrep Pap test was associated with a 4% lower odds ratio to detect HSIL+ and a similar odds ratio to detect histology-confirmed CIN2+ lesions compared to the conventional smear
- The use of SurePath resulted in a 14% increase detection of CIN1; a 14% increase detection of CIN2; a 6% increase in the detection of CIN3; and overall an 8% increase in the detection of CIN2+ and no change in the detection of cervical cancer relative to the conventional smear. The changes in the likelihood to detect biopsy-confirmed cervical lesions with the use of SurePath were statistically significant.
- In contrast, ThinPrep was not associated with an increase detection of CIN1, CIN2, CIN3, CIN2+ or cervical cancer relative to the conventional smear.

The authors concluded that the impact of replacing conventional cytology by liquid-based cytology as the primary test method depends on the type of liquid-based cytology test used. Only the use of SurePath was associated with increased CIN II+ detection, although it simultaneously increased the detection of CIN I.

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