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HPV strains affecting African-American women differ from vaccines

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Duke Medicine
Summary:
Two subtypes of human papillomavirus (HPV) prevented by vaccines are half as likely to be found in African-American women as in white women with precancerous cervical lesions, according to researchers.

FULL STORY

Two subtypes of human papillomavirus (HPV) prevented by vaccines are half as likely to be found in African-American women as in white women with precancerous cervical lesions, according to researchers at Duke Medicine.

The findings, presented on Oct. 28, 2013, at the 12th annual International Conference on Frontiers in Cancer Prevention Research hosted by the American Association for Cancer Research, suggest that African-American women may be less likely to benefit from available HPV vaccines to prevent cervical cancer.

HPV is a common sexually transmitted infection with more than 40 subtypes. The virus causes nearly all cases of cervical cancer, which begin as precancerous cervical abnormalities. Two vaccines currently available to young women prevent infection by HPV 16 and HPV 18, the HPV strains responsible for about 70 percent cervical cancers.

"Screening programs for cervical cancer are known to work well, with around 90 percent of sexually active women getting screened through Pap tests," said senior author Cathrine Hoyo, Ph.D., M.P.H., associate professor of obstetrics and gynecology at Duke University School of Medicine.

"The question is, if screening rates are comparable in African-American and white women, why are the rates of cervical cancer and mortality higher among African-American women when we have a program that works so well?"

Hoyo and her colleagues sought to better understand these disparities by determining if African-American and white women in the U.S. are infected with the same subtypes of HPV. The researchers enrolled 572 participants -- 280 African-American women and 292 non-Hispanic white women -- who came for additional testing after receiving abnormal Pap test results.

Of the 572 participants, 245 (43 percent) had no precancerous cervical abnormalities, 239 (42 percent) had early precancerous cervical abnormalities, and 88 (15 percent) had advanced precancerous cervical abnormalities. Seventy-three percent of the women infected with HPV were infected with multiple HPV subtypes.

When the researchers looked at the specific strains of HPV, they found that white women and African-American women were often infected with different subtypes. The most frequent HPV subtypes detected among white women with early precancerous cervical abnormalities were 16, 18, 56, 39 and 66, while HPV subtypes 33, 35, 58 and 68 were the most common ones detected in African-Americans.

In those with advanced precancerous cervical abnormalities, HPV 16, 18, 33, 39 and 59 were the most common genotypes detected in white women, whereas HPV 31, 35, 45, 56, 58, 66 and 68 were the most prevalent in African-American women.

"Compared with white women, we saw that African-American women had about half as many infections with HPV 16 and 18, the subtypes that are covered by HPV vaccines," said Adriana Vidal, Ph.D., assistant professor of obstetrics and gynecology at Duke University School of Medicine and the study's first author. "Since African-American women don't seem to be getting the same subtypes of HPV with the same frequency, the vaccines aren't helping all women equally."

A new HPV vaccine targeting nine HPV subtypes (6, 11, 16, 18, 31, 33, 45, 52 and 58) is currently being tested in phase III trials. While the new vaccine may help prevent additional HPV infections by covering new subtypes, it may not address the disparities found in this study.

"The most disconcerting part of this new vaccine is it doesn't include HPV 35, 66 and 68, three of the strains of HPV of which African-American women are getting the most," Hoyo said. "We may want to rethink how we develop these vaccines, given that African-Americans tend to be underrepresented in clinical trials."

The researchers noted that while these findings are compelling, the results are preliminary and the studies should be replicated in larger populations. Hoyo, Vidal and their colleagues are also continuing the research to define epigenetic marks that can be used to predict which precancerous cervical abnormalities will advance.

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