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The Effects of Human Papillomavirus Infection and Vaccination on Cardiovascular Diseases, NHANES 2003-2016

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Abstract

Background

Human papillomavirus (HPV) infection has been proposed to be an unconventional risk factor for cardiovascular diseases. We investigated the association between HPV infection and cardiovascular diseases among women with or without HPV vaccination.

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This cross-sectional study included 9,353 women aged between 20 to 59 years old who were tested for vaginal HPV DNA in the National Health and Nutrition Examination Survey (NHANES) 2003-2016. Cardiovascular diseases were defined as the presence of self-reported coronary heart diseases, heart attacks, angina pectoris, and stroke. The association between HPV and cardiovascular diseases was studied using logistic regression, with adjustment for the potential confounders.

Results

A total of 40.8% of women were HPV DNA positive; 3.0% had cardiovascular diseases; and 9.0% of women received the HPV vaccine. The presence of vaginal HPV infection was associated with cardiovascular diseases (odd ratio [OR] = 1.66, 95% confidence interval [CI] 1.28-2.16), which remained significant (OR = 1.54, 95% CI 1.15-2.08) after adjustment for sociodemographic characteristics, lifestyle behaviors, medical history, family history of cardiovascular diseases, and antihypertensive drugs. The association was absent among those who were vaccinated against HPV (OR= 0.50, 95% CI 0.07-3.51) but present among those who were not (OR = 1.63, 95% CI 1.18-2.25).

Conclusions

There was an association between HPV infection and cardiovascular diseases. This association was not significant among women vaccinated against HPV. The effect of HPV vaccination on cardiovascular diseases requires further investigation.

Keywords

Cardiovascular diseases • Coronary heart diseases • Human papillomavirus infection • HPV vaccination • Vaccination

Abbreviations:

ACE (Angiotensin-converting enzyme), ARB (Angiotensin II receptor blocker), CI (Confidence intervals), HPV (Human papillomavirus), ITR (InflammoThrombotic Response), NHANES (National Health and Nutrition Examination Survey), OR (Odds ratio), SARS-CoV-2 (Severe espiratory syndrome coronavirus 2)

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