Previous History and Cigarette Smoking as Interfering Factors for the Effect of Vaccine on Human Papillomavirus Infection

To the Editor—We have read with great interest the news and views in the article “Reduction in Human Papillomavirus (HPV) Prevalence Among Young Women Following HPV Vaccine Introduction in the United States, National Health and Nutrition Examination Surveys, 2003–2010” [1]. This article pointed out a remarkable reduction in the prevalence of human papillomavirus (HPV) due to HPV vaccine introduction. However, it is unclear why the vaccine only protected female subjects aged 14–19 years but failed to bring benefit to subjects with older ages. As is stated in the article, most Americans are infected with HPV in their late teens and early twenties. Unfortunately, the HPV infection status of each interviewed subject was not screened before the vaccine introduction; thus we cannot exclude the possibility that the nonsignificant protection in females more than 20 years old results from a preexisting history of HPV infection.

Furthermore, it is well known that nicotine (a major component of cigarette smoking) exerts strong suppressive effects on the immune system and increases the risk of various virus infections [2]. Substantial evidences have demonstrated the ability of nicotine to increase virus infection rate via enhancing the proliferation of cancer cells or stem cells [3, 4]. In addition, cigarette smoking has been linked to increased HPV DNA load [5], a strong indicator of higher risk of cervical cancer [6]. Therefore, it is important to investigate whether the observed discrepancy in vaccine efficacy among groups with different ages is associated with specific behaviors, such as cigarette smoking.

Though the report of HPV vaccine has revealed encouraging result for teenagers, to confirm the conclusion and more importantly to guarantee a better protection, the previous history of HPV infection and cigarette smoking, as well as other interfering factors, should be included into the interview questionnaire and statistical analysis.

Notes

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References


Reply to Groner et al and Pei et al

To the Editor—The comments from Groner and colleagues relating to human papillomavirus (HPV) DNA prevalence among 14–19 year olds in the prevaccine and vaccine eras [1] reflect their profound misunderstanding of the data that we would like to correct. Prevaccine era HPV data from the National Health and Nutrition Examination Surveys (NHANES) 2003–2004 were first published based on a less sensitive HPV assay than the one we currently use [2]. We subsequently documented the impact of an assay change [3] and published updated data on HPV prevalence from NHANES 2003–2006 in order to be able to monitor HPV prevalence trends [4]. The data in our recent article, showing a decline in vaccine type HPV prevalence after vaccine introduction, is robust and should be an important part of the discussion.