Gynecology-obstetrics

The human papillomavirus associated with cervical cancer: Letter to the editor.

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Abstract

The human papillomavirus (HPV) is the primary etiological agent associated with cervical cancer in more than 95% of cases. Vaccination and detection of high-risk genotypes of HPV through molecular tests have become public health strategies for the early detection of cervical cancer, which is the second leading cause of death among women over 30 years of age in Ecuador. We conducted a molecular test screening study in primary care facilities south of Guayaquil with 2,500 women aged 30- 65. This study aimed to determine the incidence of infections and the prevalent HPV serotypes. Although women under 30 years of age were excluded from screening because of the high rate of spontaneous resolution of HPV in this age group, exceptions were made in cases with suspicious cervical lesions, recurrent infections, and cytological changes identified in the Pap smear.

Keywords:

Human Papillomavirus, Cervical Cancer, Public Health, Deoxyribonucleic Acid.

Abbreviations

HPV: Human papillomavirus.

Supplementary information

No supplementary materials are declared.

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Authors' contributions

Aileen Edith Falcones Vera: Conceptualization, data curation, formal analysis, acquisition of funds, research, writing - original draft, writing - original draft, writing - review and editing.
María Georgina Pazmiño Beltrán: Conceptualization, formal analysis, acquisition of funds, research, writing - original draft, writing - revision and editing.
Holguer Estuardo Romero Urréa: Acquisition of funds, research, methodology, project management, resources, software, and supervision.
All the authors read and approved the final version of the manuscript.

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Availability of data and materials

The datasets used and analyzed during the present study are available from the corresponding author upon reasonable request.

Introduction

Human papillomavirus (HPV) is closely associated with cervical cancer and has a significant impact on primary health care. Early detection of high-risk HPV infections helps prevent cervical cancer, one of the leading causes of death in women, especially in low- and middle-income countries such as Ecuador.

Studies in Mexico City have demonstrated the efficacy of HPV polymerase chain reaction DNA sequencing; 53% of invasive cervical cancer cases are related to HPV genotypes 16 and 18. Consequently, the implementation of molecular tests for the early detection of HPV has played a central role in reducing mortality from cancer of the cervix in that country. The development of vaccines for HPV genotypes 16 and 18 has consistently contributed significantly to reducing mortality from cervical cancer [1].

According to the latest data from the International Cancer Agency and GLOBOCAN, in 2022, 1,792 women were diagnosed with cervical cancer, and 939 Ecuadorian women died from this cause, representing more than 52% mortality from this disease [2]. Early detection of HPV can modify these statistics. It is estimated that between 60% and 75% of sexually active people are infected with one or more subtypes of HPV. In a study conducted by the SOLCA Cancer Institute in Cuenca to measure the prevalence of HPV genotypes in Pap smears in sexually active women with uterine lesions, an increase in prevalence was demonstrated, with a positivity rate of 71.38% for HPV, surpassing the statistics of the region and historical records. The most prevalent genotypes identified were HPV-16, HPV-58, HPV-6, and HPV-31, which are all classified as having a high risk of malignancy, along with HPV-71, which contributes to more than 50% of the total prevalence [3]. This increase in positivity has been reported in other countries. Additionally, a relationship has been observed between the number of births and HPV infection, with a higher percentage of multiparous women being infected.

Concerning marital status, there is no difference between married and single women, and demographic variables are not associated with low-risk HPV genotypes [3].

On the other hand, in studies of sexually active women who do not have uterine lesions, the positivity rate is approximately 12%; however, an increase of 17.7% to 32.5% is also beginning to be reported in different studies [4], which is why the Ministry of Public Health of Ecuador, through the Ministerial agreement 0059--2017, issued the "National Strategy for Comprehensive Cancer Care in Ecuador", establishing lines of action for the prevention and control of cancer cervical cancer by strengthening the universal immunization program against HPV. In addition, an intensive screening campaign for cervical cancer was established by screening women aged 21- 65 years with Papanicolaou every 3 years and, in women aged 30- 65 years, screening with cytology and molecular tests for HPV every 5 years (MSP, 2017). In the first four months of 2024, 98 thousand PCR tests for HPV were performed in 36 national centers [5,6].

One of the screenings in the city of Guayaquil with PCR tests for HPV typing was carried out from November 2023 to August 2024 in 2,500 sexually active women without symptoms, from 30--65 years of age, reaching a screening rate of 2.5% of the projected population for cervical screening in the city of Guayaquil. A total of 320 women (12.8%) were positive for HPV. A total of 34 patients (10.6%) had the HPV-16 genotype; 5.6% (N = 18) had the HPV-19 genotype; and 75.6% (N = 242) had the other high-risk genotypes. There were two determinations: 5.3% (N = 17) for the HPV-16 genotype + other high-risk genotypes and 2.8% (N = 9) for the HPV-18 genotype + other high-risk genotypes. The study included 27 women under 30 years of age because of the presence of suspicious cervical lesions, recurrent infections, and cytological abnormalities in Pap smears [7].

It is expected that socioeconomic factors influence the prevalence of HPV [8]. Some studies from around the world have shown this. In Brazil, the prevalence in rural and suburban areas is 78%, while in Croatia, it is 10.2%. In both instances, high-risk HPV types, such as 16, 18, 58, and 59, were the most common. Populations most affected by limited access to health services, low income, and discrimination include Afro-descendant women. These same socioeconomic conditions could, at least in part, explain the high rates of HPV observed in rural and marginalized urban areas [8].

Genotypic surveillance of HPV at the local level is essential since vaccines are carried out based on the prevalence of serotypes from developed countries, in which HPV 16 is the most common. For example, in Mexico, which is not the local reality, HPV-31 occupies the first place. The HPV-58, -66, and -59 genotypes are also the most common [9]. The results obtained in Ecuador are similar to those reported in Mexico. A total of 75.6% (N = 242) of the strains had other high-risk genotypes: HPV-31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66, and 68.

Even within Ecuador, there is heterogeneity in HPV infection. While a study was carried out in Cañar, HPV-31, 58, 66, and 59 predominated as high-risk viruses [10]. In Cuenca Azuay, HPV 16 was identified as the most common genotype in women aged 36- 40 years, and HPV 18 was among the other high-risk genotypes [3]. On the other hand, the INSPI (National Institute of Public Health and Information of

Ecuador) evaluated its presence along the coast of Ecuador; the most common prevalence was HPV-16, and the most frequent among the other groups was HPV-58 [11]. These differences could result from a bias in the sample size; however, the socioeconomic factors of the population and the distribution of the population group with limited resources must be considered for interpretation.

The prevalence age does not vary across the different studies. However, the research is broad from 30- 60 years; the trend is to expand the range from 25- 65 years, determining that although the highest rate of positivity is found between 20- 30 years of age [12], some cases can be diagnosed outside the usual age of prevalence.

The high frequency of multiple HPV infections, especially in women with multiple sexual partners, highlights the complexity of the infection and the need to implement more robust prevention and early detection strategies [13]. Future research could explore the relationships between different HPV genotypes and the progression of cervical lesions, as well as the influence of socioeconomic and lifestyle factors on susceptibility to infection.

Finally, in the studies identifying HPV 16 and 18 genotypes, there were previous cytology results. These indicated ASCUS cellular alterations, which refer to atypical squamous cells of uncertain significance, the most common abnormal finding in the Papanicolaou test. Therefore, it is essential to complete the screening for study patients in Guayaquil diagnosed with "Other High-Risk HPV Viruses" through cytological examinations to identify potential cellular changes.

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Declarations

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Not needed.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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