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ORIGINAL

Prevalence of human papillomavirus and genotype distribution in women undergoing cervical cancer screening in the area of Barbastro, Spain

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KEYWORDS
Cervical cancer screening;
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Prevalence

Abstract Study of cervical cancer screening using HPV and PAP co-testing. Target population (30–64 years of age) was 27,409 women using Cobas 4800 HPV testing. 810 patients with positive HPV between 2012 and 2014.

HPV prevalence, 8.3%. 23% positive to HPV16, 8% to HPV18 and 69% to other genotypes. 56.5% had benign cytology, 14.2% ASC-US and 14.9% LSIL. 16/18 genotypes more frequent in the 30–45 age group. Women <30 years, infection by multiple genotypes was more frequent than infection by a single genotype. 138 (17%) biopsies were CIN2+, 73 (52.9%) positive for HPV16/18 and 65 (47.1%) positive for other genotypes ($P < 0.001$). 24.2% of the women with positive results for more than one genotype group had a CIN2+, 15.8% positive for a single genotype group ($P = 0.024$).

PALABRAS CLAVE
Cribado de cáncer de cérvix;
Genotipos 16/18;
VPH alto riesgo;

Prevalencia del virus del papiloma humano y distribución de genotipos en las pacientes con cribado de cáncer de cérvix en el área de Barbastro, España

Resumen Estudio del cribado de cáncer cervical utilizando cotest (test de VPH y citología). La población diana (30-64 años) fue de 24.578 mujeres. El test de VPH se realizó con Cobas 4800. Ochocientas diez pacientes con VPH positivo entre 2012 y 2014.

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Virus del papiloma humano;
Prevalencia

Prevalencia de VPH, 8,3%. Un 23% positivas a VPH16, 8% a VPH18 y 69% a otros genotipos. El 56,5% VPH positivos tenían una citología benigna, 14,2% ASC-US y 14,9% LSIL. VPH16/18 más frecuentes en el grupo de 30-45 años. Pacientes <30, la infección por múltiples genotipos fue más frecuente que la infección por un solo genotipo. Ciento treinta y ocho (17%) biopsias fueron CIN2+, 73(52,9%) positivas a VPH16/18 y 65(47,1%) a otros genotipos (p < 0,001). El 24,2% de las mujeres positivas a más de un genotipo tuvo CIN2+ y 15,8% de las positivas a un solo genotipo (p = 0,024).

Introduction

Globally human papillomavirus (HPV) infection is the most common sexually-transmitted infection that leads to cervical cancer. Cervical cancer ranks as the fourth most common cancer of women worldwide.[1] Most sexually active women will have an HPV infection at some time during their lives. Over 150 types of HPV have been identified, which can be classified according to their malignant potential into low-risk HPV and high-risk HPV. In high-risk HPVs, two types, 16 and 18, account for about 70% of cervical cancers.[2] The majority of HPV infections do not cause symptoms or disease and resolve spontaneously. Persistent infection with low-risk HPV types causes cytological alterations, low-grade squamous intraepithelial lesions (LSILs), grouped into cervical intraepithelial neoplasia (CIN) or low-grade CIN called CIN 1. In a lower percentage of patients, high-risk oncogenic HPV types may progress to high-grade squamous intraepithelial lesions or HSIL, precancerous cervical lesions, including CIN 2, CIN 3, and cancer of the cervix.[3]

The objective of cervical cancer screening is to prevent the occurrence and death from cervical cancer by detecting and treating precancerous cervical lesions. Conventional cytology and high-risk HPV typing (''co-testing'') for women aged 30–65[4] is recommended by the American Society for Colposcopy and Cervical Pathology (ASCCP) and the Spanish Society of Obstetrics and Gynecology (SEGO),[5] although scientific societies are currently considering a primary screening method based on high-risk HPV testing only.[6] In the area of Barbastro, Huesca (Spain) cervical cancer screening has been based on co-testing since 2011. Based on data of co-testing recorded for three consecutive years (2012–2014), a study was designed to assess the prevalence of high-risk HPV genotypes in our geographical area and to determine whether there was a relationship between cytological results, genotype, and HPV persistence with demographic variables, such as age, place of residence, and nationality.

Materials and methods

A retrospective descriptive study of cervical cancer screening using co-testing was performed, the primary objective of which was to assess the prevalence of HPV infection in the area of Barbastro, Huesca, Spain. Huesca is a province of northern Spain in the Autonomous Community of Aragon. The geographical area of Barbastro (Eastern half of the province of Huesca) has a population of 107,428 inhabitants (52,535 women), mostly aging and dispersed in rural areas. The target population eligible for cervical screening (25–64 years of age) is 27,409 women, and the target population for primary screening with cervical cytology and high-risk HPV testing (30–64 years of age) is 24,501 women. A total of 810 women with positive HPV tests from January 1st, 2012 to December 31st, 2014 were included in the study. Screening was performed in the primary care centers and women with a positive Pap smear test were then referred to the outpatient gynecology clinics for high-risk HPV testing according to the 2010 SEGO protocol.[5] The coverage of the program during the study period increased from 50% in 2012 to 67% in 2014.

High-risk HPV testing was performed with the FDA-approved and validated[7] Cobas 4800 HPV test (Roche Diagnostics, Mannheim, Germany), which is based on real-time PCR (RT-PCR) with a fully automated system allowing quick and efficient sample processing. The test can detect HPV16, HPV18, 12 other high-risk HPVs (HPV31, -33, -35, -39, -45, -51, -52, -56, -58, -59, -66, and -68, as a pooled result), and the β-globin control independently in the same PCR.

For all women, the following data were recorded: age (grouped into the categories of <30 years, between 30 and 45 years, and older than 45 years); place of residence (categorized as rural [<9000 inhabitants] and urban [>9000 inhabitants]); nationality (classified into Spanish and foreigners) and the cytology results classified according to the Bethesda system,[8] (grouped into minor lesions for benign conditions [atypical squamous cells of undetermined significance, ASC-US; atypical squamous cells, cannot exclude a high-grade squamous intraepithelial lesions, ASC-H; or LSIL] and major lesions for HSIL or carcinoma). Histologic results either of/at the biopsy, conization or at any of the follow-up controls were classified as benign, CIN 1, CIN 2, CIN 3 or carcinoma and a biopsy-dependent variable CIN 2+ was established that included CIN 2, CIN 3 and carcinoma. Virological results were also recorded. Demographic data were collected from the database of the Aragon health care system, and cytological, histological and virological results were obtained using the Pat-win system (database of the Pathology Department). Data collected from all databases were anonymized. Patients were identified by numerical codes.

Genotypes 16 and/or 18 were grouped as virus at risk. Multiple infection was considered in the presence of positivity for one or more genotypes groups (16 and 18 or any of them with the group of the 12 genotypes), although