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HPV in cervical cancer

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Abstract: HPV infection is very common; it is estimated that about 80% of sexually active women will acquire it over the course of their lives. Approximately 291 million women worldwide have HPV, and 32% are infected with subtypes 16, 18 or both. The present study is characterized as a descriptive literature review with characteristic on HPV-related complications in cervical cancer. Invasive squamous cell carcinoma is one of the most serious public health problems, especially in developing countries. For the most part, invasive cancers are preceded by lesions which remain long periods in latency, but some may have shorter preinvasive periods, as with small cell periods. In the field of public health, educational interventions in the population promote access to adequate information about HPV and prevention measures, so the important role of Primary Care and the Family Health Support Center (NASF) in Brazil stands out.

Keywords: HPV; Cancer; Cervix.

1. Introduction

The human papillomavirus (HPV) belongs to the family of the Papillomavirus or *Papillomviridae* and is responsible for a sexually transmitted infection known as condyloma acuminata, genital wart or also rooster crest. There are about 120 types, 36 of which can infect the genital tract.

The most common oncogenic viral types are HPV 16 and 18, responsible for about 70% of cases of cervical cancer, while 6 and 11 are associated with up to 90% of genital year warts. In Brazil, the hpv prevalence profile is similar to the global one, 3.2% for HPV 16 and 15.8% for HPV 18.

HPV infection is very common, it is estimated that about 80% of sexually active women will acquire it over the course of their lives. Approximately 291 million women worldwide have HPV, and 32% are infected with subtypes 16, 18 or both. Comparing these data with the annual incidence of approximately 500,000 cases of uterine cervix cancer, it is concluded that cancer is a rare outcome, even in the presence of HPV infection, that is, HPV infection is a necessary factor, but not sufficient for the development of uterine cervical cancer. Cervical cancer is the third most frequent tumor in the female population, behind breast and colorectal cancer, and the fourth leading cause of death of women from cancer in

Brazil

The Ministry of Health in 2014, through the National Immunization Program (PNI), expanded the National Vaccination calendar with the introduction of the quadrivalent human papillomavirus (HPV) vaccine in the Unified Health System (SUS). The HPV vaccine is offered free of charge to adolescents aged 9 to 13 years in the Basic Health Units (UBS), using the extension strategy for public and private schools. In 2014, the target population of hpv vaccination was composed of female adolescents aged 11 to 13 years. In 2015, adolescents aged 9 to 11 years were vaccinated, and from 2016, 9-year-old girls will be vaccinated. The Ministry of Health established this age group as the target audience of vaccination in the public network, considering that the vaccine is highly effective in girls aged 9 to 13 years, that is, those who have not yet started sexual life, not exposed to the virus, especially HPV types 6, 11, 16 and 18, inducing the production of antibodies in quantity ten times higher than that found in naturally acquired infection within two years. Initially, the extended vaccination schedule was adopted, consisting of three doses (0, 6 months, and 60 months).

2. Methodology

The present study is characterized as a descriptive literature review with characteristic on HPV-related complications in cervical cancer. In the searches, the following databases were used: Literatura Latino Americana e do Caribe em Ciências da Saúde (LILACS), Scientific Electronic Library Online (SciELO) and Google academics.

3. Results and Discussion

Invasive squamous cell carcinoma is one of the most serious public health problems, especially in developing countries. For the most part, invasive cancers are preceded by lesions which remain long periods in latency, but some may have shorter preinvasive periods, as with small cell periods. The incidence of invasive cancer has two peaks, from 30 to 40 years and another after menopause (FREE *et al.*, 1991; KOSS; GOMPEL, 2006; STANBRIDGE *et al.*, 1992).

There are several risk factors for cervical cancer, but the human papilloma virus (HPV) plays a special role in the appearance of this pathology. In invasive carcinomas, the most common are HPV 16 and 18, which have their DNA integrated with that of the cancer cell (KOSS; GOMPEL, 2006).

It is an invasive malignant tumor, with differentiation in the sense of squamous cells. Invasive carcinoma is defined as any cervical tumor that has exceeded the basal membrane, invading the adjacent stroma. Cancer staging is fundamental for therapy and prognosis; when the patient's cancer is confined to the cervix the prognosis is better than when the lesion exceeds the cervix (ELEUTÉRIO JUNIOR, 2003).

The identification of invasive cervical cancer in a smear is difficult to perform due to the presence of inflammatory exudate, necrotic material and red blood cells,

which hide cancer cells. In addition, the cells found in these smears are poorly preserved and in small numbers (KOSS; GOMPEL, 2006).

Intraepithelial lesions of the Cervix

Histologically, they present disorganization of the squamous epithelium, nuclear atypia's and anomalous mitoses. Well differentiated lesions are low-grade squamous intraepithelial lesions, and those with less differentiation are high-grade squamous intraepithelial lesions. LSIL corresponds to CIN I, mild dysplasia and HPV-associated alterations, while HSIL includes moderate and severe dysplasia's, carcinoma in situ and lesions previously named CIN II and CIN III (NAYAR, 2005).

Most neoplasms start at the junction between the squamous epithelium of the intravaginal part of the cervix and the endocervical spinal epithelium, the transformation zone; is where squamous metaplasia occurs. From the transformation zone, neoplasms can be directed to the squamous epithelium of the ectocervices or to the endocervical epithelium. Squamous epithelium lesions are distinct from those of the endocervical epithelium, facilitating diagnosis (KOSS; GOMPEL, 2006).

Squamous epithelium lesions maintain the characteristics of the epithelium and those of the endocervical epithelium have cells similar to those of squamous metaplasia. Small cell carcinomas originate from the reserve cells of the columnar epithelium, which can trigger adenocarcinomas. Most low-grade lesions and keratinizing in situ carcinomas (30% of these lesions) are observed in the squamous epithelium of the ectocervices, and may extend to the adjacent squamous epithelium of the vagina.

Carcinomas *in situ* with cells similar to metaplastic cells (50% of these lesions), mostly starts at the junction and columnar squaw and can progress to the ectocervices and the endocervices. Small cell carcinomas (10% of these lesions) are in the cervical canal (KOSS; GOMPEL, 2006; SOLOMON; NAYAR, 2005).

4. Conclusions

In the field of public health, educational interventions in the population promote access to adequate information about HPV and prevention measures, so the important role of Primary Care and the Family Health Support Center (NASF) in Brazil regarding aspects related to prevention and health promotion stands out, mainly with low-income families and also with low schooling. It is expected that this research will inspire further investigations aimed at deepening and disseminating this theme so important to present and future generations, since the HPV vaccine is an elementary preventive method, which needs to be well explored in order to be consolidated and its importance recognized by health professionals and users.

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