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OPINION ARTICLE

The Human Papillomavirus Vaccine: Is it of Value in Dermatology?☆

La vacuna frente al papilomavirus humano, ¿tiene interés en dermatología?

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Two new human papillomavirus (HPV) vaccines have recently become available in Spain: Gardasi (Sanofi Pasteur MSD), a quadrivalent vaccine that protects against HPV types 6, 11, 16, 18, and Cervarix (Glaxo-SmithKline), a bivalent vaccine that protects against HPV types 16 and 18.[1,2] Both are indicated for the prevention of cervical cancer. They are composed of virus-like particles containing viral proteins and are administered in 3 doses to girls and young women prior to sexual debut; the preferred age for administration is 13 or 14 years.[3,4]

However, cervical cancer is not the only disease caused by these small cutaneotropic or mucosotropic DNA viruses, of which over 150 types have been identified to date.[5,6] They are also implicated in numerous other conditions, mainly dermatologic, including common warts (100% of cases), genital warts (100% of cases), vaginal, vulvar, and penile cancer (40% of cases), anal cancer (90% of cases), certain cancers of the oral cavity and the oropharynx,[7] and skin lesions in patients with epidermodysplasia verruciformis and in immunosuppressed individuals, including organ transplant recipients.[8–10] This begs the question: might some of these patients thus also benefit from HPV vaccines?

Most HPV infections are latent and resolve spontaneously in 1 or 2 years.[11] However, a small proportion develop into a persistent infection, which, when caused by oncogenic HPV types, can progress to precancerous lesions of varying severity over the course of years. Some of these precancerous lesions may progress to in situ or invasive carcinomas. It is thus important to prevent HPV-related conditions, not only because of the associated morbidity but also because of their carcinogenic potential.

HPV types 16 and 18 are included in both the bivalent and quadrivalent vaccine because they are high-risk strains responsible for 70% of high-grade precancerous cervical lesions (cervical intraepithelial neoplasia [CIN] grades 2 and 3). They are, however, also responsible for 70% of anogenital cancers (70%–90% of vaginal and anal cancers and 40% of vulvar and penile cancers[12]) and 10% of oral cavity and oropharyngeal cancers.[13,14]

While types 6 and 11 have low oncogenic potential, they are included in the quadrivalent vaccine because they can cause low-grade precancerous lesions (CIN 1). They are also responsible for the vast majority (90%) of genital warts and cases of oral papillomatosis.

The quadrivalent vaccine thus has enormous potential value in dermatology as it should, in theory, provide indirect protection against numerous conditions other than cervical cancer. Clinical trials have shown this vaccine to offer complete protection against warts caused by HPV types 6 and 11.

Although Spain has a low prevalence of HPV infection (estimated at 4% in women aged 15–74 years), data from other countries suggest that 1 in 8 women will develop genital warts at least once before the age of 50 years and that 10% of the population will have at least 1 episode of genital warts within 25 years of becoming sexually active. Because of the psychological, physical, and economic repercussions associated with the diagnosis and treatment of HPV infection, prevention is very important. The bivalent and quadrivalent HPV vaccines have proven to be safe, minimally reactogenic, and highly immunogenic. Furthermore,

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because the quadrivalent vaccine induces robust immune memory, its protective effect is likely to last for life.

Both vaccines are currently licensed for the prevention of cervical cancer in girls and women aged 12 to 25 years, essentially because they have been studied for this indication in females in this age group. There is nothing, however, to indicate that they might not also be effective in other skin infections associated with the HPV types contained in these vaccines, or even in males[15] and other age groups. In fact, studies are already underway to assess the efficacy of HPV vaccination in males and other age groups. Thus, the bivalent and quadrivalent vaccines have enormous, unexplored potential in the prevention of a range of dermatologic conditions. Hypothetically, they could prevent 90% of genital warts, 40% of penile carcinomas, 70%–90% of anal cancers, and 10% of oral cavity cancers.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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