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Two doses and not three for the human papilloma virus vaccine in Chile

Decisión sobre vacunación anti-virus papiloma humano en Chile con dos dosis en vez de tres

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Cervical cancer accounts for 9% of overall cancer mortality and it is known that some types of human papilloma virus (types 16 and 18) cause most of these tumors. Chile has recently introduced a national immunization program to address this problem, but voices have arisen against the use of two doses instead of three.

According to the World Health Organization's 2014 *Cancer Country Profile,* Chile is a high-income country, with a life expectancy of 83 years for women and 77 years for men. There were 11,600 deaths from cancer in the country, of which 6.2% were caused by cervical cancer. Cervical cancer mortality rate is six per 100,000 women, which translates into approximately 600 deaths every year from this disease. There is a screening program for cervical cancer in primary care. Fifty percent of women between 25 and 55 years-old get a Papanicolaou every three years.

In 2014, the national health authority decided to include the human papilloma virus vaccine in the National Immunization Program using the quadrivalent vaccine that covers two types of virus that account for 70% of all cervical cancers and two other types that cause sexually transmitted diseases (genital warts) highly prevalent in young people [1]. This decision was grounded in ample evidence of vaccine efficacy [2],[3],[4]. To date, over 600,000 doses have been administered to girls in primary school attending 4th, 5th, 6th and 7th grade. With a coverage estimated around 85%, all girls that graduate from primary education this year will have had the opportunity to be immunized. The cost for the program in the 2015 budget was roughly 6 billion CLP (US$ 8,200,000).

Human papilloma virus is also a risk factor for other types of cancer, such as the oropharyngeal ones. It is expected that by the end of the next decade, oropharyngeal squamous cell carcinoma will overtake cervical cancer as the most frequent HPV-related tumor, as up to 80% of these cancers can be attributed to the virus [5],[6]. These cancers also affect men, thus making it likely that the vaccine will also be administered to men in the future with the purpose of increasing "herd" protection in the whole population that may be exposed to the infection [7].

The World Health Organization is currently recommending using two doses and not three as had been advised before 2014 [8]. Evidence published in 2013 and early 2014 shows equivalent effectiveness of two doses separated by at least six months vis-à-vis the traditional three-dose scheme. Other more recent studies also provide preliminary evidence of vaccine efficacy with two doses [9]. There are additional benefits from these vaccines as they also prevent non-cervical cancers caused by human papilloma virus. Immunization strategies that cover boys [10],[11],[12] as well as girls also help to reduce this cancer load. These are important options assessed in the literature that should be systematically addressed in future studies and once we know what coverage we will be achieving in girls on an ongoing basis [13].

There is significant uncertainty in the simulation models used in formulating health policies. Several factors can lead to either good or bad results. Some of these include variability in vaccine coverage, impact from anti-vaccine campaigns, changes in vaccine pricing, budget considerations especially when competing with other options that may seem to be more urgent, lack of evidence on the immune protection time-span of the vaccine that is currently being used in Chile [13],[14],[15].

It is necessary to assess the impact of the vaccine and the immunization program in Chile. The evaluation of impact must take into account at least some of the following aspects:

- Assessment of the incidence of genital warts on vaccinated girls once they initiate their sexual activity, which is around the age of 17 according to national surveys. This same assessment conducted in countries with a greater length of follow-up has shown a reduction of about 90% of incidence, as is the case of Australia [16],[17].
- Assessment of the incidence of precursor cervical intraepithelial lesions in vaccinated women.
- Measurement of duration of antibodies induced by the vaccines.
- Assessment of vaccine coverage in girls with the purpose of considering the inclusion of boys in the program.

All of these considerations provide adequate context for a rational discussion on the benefits of a vaccination program that has already been proven successful in several other countries. More than trying to fight the tide of times in this matter, one would like to see a more informed engagement in the discussion of health policies and decisions that affect the lives of many. Girls´ health is important, and if there are effective and safe options, such as a two-dose vaccination scheme, then we should advise for it and not against it.

Notes

Conflicts of interest

The author declares no conflicts of interest with the subject of this editorial.

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