

Preventing Cervical Cancer: Pediatrician's Role

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Cervical cancer is the most common cause of death due to cancer in women, worldwide(1). Each year there are about 500,000 new cases and 275,000 deaths due to cervical cancer globally. The burden of cervical cancer is disproportionately high (>80%) in the developing world(2). One fourth of affected patient population is from India. Current estimates suggest that 132,082 women are diagnosed with cervical cancer leading to 74118 deaths every year and it is the leading cause of 'years of life lost' due to any cancer among Indian women(3). The cumulative risk of incidence and mortality amongst Indian women is almost double as compared to that for the world.

Unfortunately, cervical cancer affects women as young as 35-45 yrs of age when they are in their prime and affects not just the mother but also the entire family. Additionally, there are very few signs and symptoms of cervical cancer in the initial stages when it is treatable and overt symptoms become evident only in late stages of cancer, when medical/surgical treatment has little to offer.

WHAT CAUSES CERVICAL CANCER?

Presence of oncogenic HPV-DNA has been demonstrated in 99.7% of all cervical cancer cases, the highest attributable fraction so far reported for a specific cause of major human cancer. Though more than 100 types of HPV have been discovered, only 40 infect the genital tract of which 15 genotypes are oncogenic. Worldwide, 70% of cervical cancer cases are due to HPV type 16 and 18 (type 16 accounting for 54% and type 18 accounts for about 17% cases), and type 45,31,33 and 52 accounting for most of the remaining cases(4-6). In India, the estimated HPV-

16/18 positive fraction was 78.9% in women with invasive cervical cancer(7).

SCREENING

With regular population based cervical screening using Pap smear cytology, the incidence and mortality of cervical cancer in developed countries has been drastically reduced. Cervical cancer prevention, as practiced in high-resource regions, includes screening; triage of equivocal results; colposcopically guided biopsy of abnormal screening results; decision whether to treat; treatment; and post-treatment follow-up (including eventual return to routine screening intervals if appropriate). However, screening in the absence of a treatment program is unethical(8). An organized screening program need to (i) define a target population (every sexually active women), (ii) administer screening test to the target women at a specified interval (1-5 years), (iii) achieve a high level of coverage to screening(>70%), (iv) establish an effective call- recall system for investigation and (v) treat screen positive women. Such an organized screening program is non-existent in India. In recent years a momentum has been built up to identify low cost alternative screening tests like VIA/VILI (Visual inspection after acetic acid/lugol's iodine application). Results of such intervention has been found satisfactory(9). However, to implement even a VIA-based national screening program, large investment has to be made in terms of logistics and training of health care personnel.

VACCINATION

Highly efficacious vaccines against HPV are now available and have given new directions in cervical

cancer prevention. A health and economic impact analysis observed that with pre-adolescent vaccination alone, the mean reduction in the lifetime risk of cervical cancer is expected to be 44% if 70% coverage is achieved(10). A successful vaccination program has the potential to save hundreds of thousands of lives in our country. Worldwide, there are two HPV vaccines available. One protects against HPV 16 and 18 and also against low risk genotypes 6 and 11 (quadrivalent vaccine) and the other vaccine protects only against HPV 16 and 18 (bivalent vaccine).

Efficacy and safety

Both the vaccines have nearly 100% efficacy to protect against persistent infections of HPV types 16 and 18 and also against the cervical cancer precursors caused by them(11). In India, over 75% of the cervical cancers are attributed to these two HPV types implying that a high level of protection can be offered by the vaccines(6). The quadrivalent vaccine has in addition, demonstrable efficacy against vaginal and vulvar cancers, anogenital warts and recurrent respiratory papillomatosis attributable to HPV genotypes 6 and 11. Efficacy remained high for at least 5 years following vaccination(12). Additionally, both vaccines demonstrate some protection against few of the other HPV types not included in the vaccine. Both vaccines have favorable safety profile and data are available from large safety database(13). Adverse events reported are generally mild and includes pain and redness at injection site, fever, headache, myalgia, fatigue etc.

Duration of immunity

Both vaccines have demonstrated efficacy for at least 5 years. Longer-term follow-up in adolescents and adults is underway. Quadrivalent HPV vaccine has demonstrated immune memory (hallmark of long term protection), upon administration of a challenge dose of vaccine at year 5 to the group that received vaccine at study onset resulted in strong anamnestic responses(14). At present there is no data to support use of boosters.

GUIDELINES FOR HPV VACCINE

Various professional organizations in several countries have formulated guidelines for

vaccination against HPV. Fortunately these guidelines vary little in their key recommendations. Indian Academy of Pediatrics (IAP) recommends offering HPV vaccine to all appropriate females who can afford the vaccine. The vaccine should also be introduced to parents as a cervical cancer preventing vaccine and not as a vaccine against sexually transmitted infections. Ideally the vaccine should be administered prior to sexual debut to avoid any possibility of transmission of the virus. IAP recommends that girls aged 10-12 years should be vaccinated(15). Vaccine can be administered up to the age of 26 years (catch up age). However, women over 26 years of age are also vulnerable to HPV infection and are likely to benefit from vaccination.

INTRODUCTION OF HPV VACCINE INTO HEALTH CARE SYSTEM

Introducing HPV vaccine in public health program would be extremely challenging in India, primarily due to its prohibitive cost. However, use in private sector would help in raising awareness among the medical profession as well as the masses and generate confidence in the efficacy and safety of a vaccine that can actually prevent cancer. A broader demand and generous support from various national and international institutions may ultimately bring down the price of HPV vaccine substantially. Pediatricians are the most used health care resources by young adolescents and will therefore play an essential role in raising vaccine awareness. Pediatricians also have the opportunity to educate patients and parents on HPV infection and the risk for cervical cancer(16).

A comprehensive health program for adolescents could provide a platform for introduction of HPV vaccine. Indian Academy of Pediatrics has started sensitizing pediatricians to play an active role in cervical cancer prevention program named "Ankush". For a broader framework of cervical cancer control there is need to build partnership amongst various professional organizations engaged in immunization, sexual and reproductive health, public health and advocacy at various levels.

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