

Cervical Cancer; Testing, screening, promoting HPV vaccination, post-vaccination screening.

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I. Background:-

Finding cervical cancer often starts with an abnormal HPV (human papillomavirus) or Pap test result. This will lead to further tests which can diagnose cervical cancer or pre-cancer. The Pap test and HPV test are screening tests, not diagnostic tests. They cannot tell for certain if a woman has cervical cancer. An abnormal Pap test or HPV test result may mean more testing is needed to see if a cancer or a pre-cancer is present. Cervical cancer may also be suspected if a woman have symptoms like abnormal vaginal bleeding or pain during sex. The primary doctor or gynaecologist often can do the tests needed to diagnose pre-cancers and cancers and may also be able to treat a pre-cancer. If there is a diagnosis of invasive cancer, the doctor should refer to a gynaecologic oncologist, a doctor who specializes in cancers of women's reproductive systems.

Pap smear test important, says expert

A smear test would assure a woman that she has not contracted the Human Papilloma Virus (HPV) which causes cervical cancer, says gynaecologist

Every woman should undergo the Pap smear test at least once in her lifetime. HPV is sexually transmitted and results in infection. Women should go for a screening for cervical cancer three years after becoming sexually active, she said. While almost 90 per cent of infections clear on their own within two years, it is estimated that seven to eight women out of 10 can be at risk for HPV.

Poor hygiene and multiple partners are risk factors for the infection. Smear tests help detect precancerous stage and prevent cancer but cannot detect cervical cancer, she explained.

New tool to detect cervical cancer: -

The menstrual pad test can become a stress-free screening method

Testing menstrual blood present on menstrual cloth can help detect human papilloma virus (HPV), which is one of the main causes of cervical cancer, researchers from Mumbai's Tata Memorial Centre and National Institute for Research in Reproductive Health (NIRRH) have found. The study was carried out on over 550 women aged 30 to 50 years at two rural populations in Maharashtra. The results were published in the journal *European Journal of Cancer Prevention*.

Cervical cancer is a major public health problem in India, and although there are cervical cancer screening tests, most rural Indian women fear the test and see it as an unpleasant experience.

Samples testing

Over 190 eligible women were recruited for the study from two villages close to Jamkhed Tahsil of Maharashtra. The women who consented underwent HC2 testing to detect HPV. All the women, whether positive or negative for HPV, were asked to store their cloth pad used on the first day of period and immediately hand it over to the health worker. The collected menstrual cloth samples were sent to NIRRH for testing.

The DNA extracted from the dried menstrual blood was amplified and tested for HPV. Over 3% positive HPV cases were detected from this area (both HC2 and DNA study showed positive). They underwent further vaginal examination and treatment. Two cases of cervical lesions were also diagnosed.

Additional study

After satisfactory results from first area, another rural population with significantly better social indicators was studied. Over 360 women from 16 villages from Mulshi area of Pune district were selected for the study. However, the women were not tested for HPV but their menstrual blood was tested.

From this population, 4.9% cases were diagnosed as HPV positive using DNA tests. The HPV positive women and a few HPV negative women underwent vaginal examination, HC2 test and PAP smear test (another cervical cancer test).

The sensitivity of the menstrual pad HPV testing in the first and second area was 83% and 67%, respectively, and the specificity was 99% and 88% in the two areas. The reduced sensitivity at second area could be due to electricity failure in the health centre as the samples need to be continuously stored at -20°C.

According to the researchers, the menstrual pad DNA testing could be used instead of PAP smear test as PAP test has several limitations such as very low sensitivity of around 50% and the method of sample collection is both painful and invasive.

“Most of the women in these villages are daily wagers and do not want to waste a day for clinical screening. There is low participation in community screenings as they are shy and also fear the test. By using menstrual pad/cloth as a screening tool we can provide comfort and convenience to the participants,” says gynaecologists. By developing a simple method to mail the pads to the lab by participants itself, menstrual pad test can become a stress-free cervical cancer screening method.

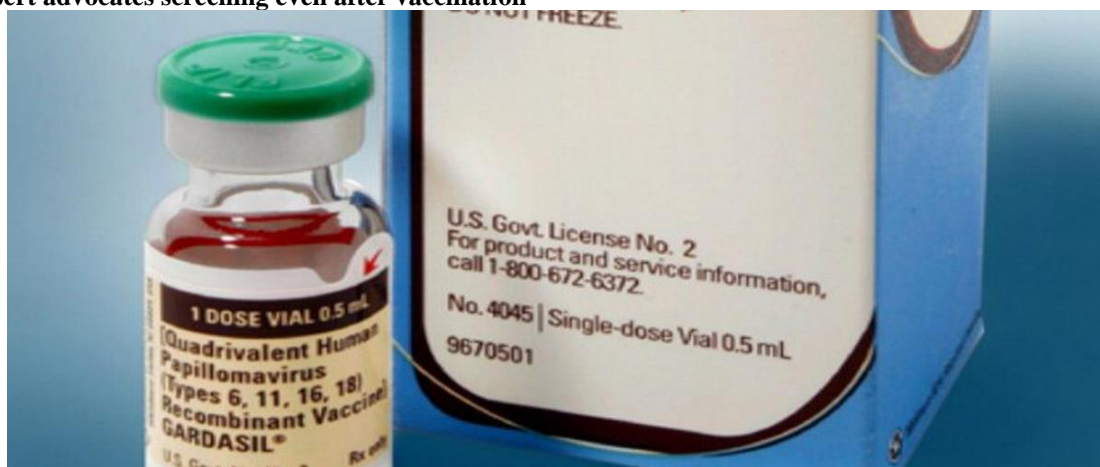
Along with vaccination, screening must be done to detect early signs of HPV HPV vaccine

Studies had shown that HPV vaccine provides immunity for a period of 5 years but only time and further studies would tell how long the immunity would last. On the nature of virus, HIV infection brings about changes in the RNA and HPV attack the DNA in the human system.

India has taken up the fight against cervical cancer in earnest with the Central government announcing that it will roll out vaccination for girls aged between 9 and 14 years through schools. The decision comes at a critical juncture with a study in *The Lancet* published showing that India accounts for the highest number of cervical cancer cases in Asia, followed by China. More than 58% of all cases of cervical cancer and deaths globally were estimated in Asia with India accounting for 21% of cases and 23% of deaths, followed by China (18% and 17%). Cervical cancer is a preventable and treatable cancer. It is caused by infection with the human papillomavirus (HPV) and there are vaccines which protect against carcinogenic HPV. With more than 6,00,000 women diagnosed with cervical cancer worldwide in 2020, the World Health Organization laid down several guidelines that countries need to follow to eliminate it as a public health problem. According to the International Agency for Research on Cancer, the WHO has specified that countries must reach and maintain an incidence rate of fewer than 4 new cases of cervical cancer per 1,00,000 women a year. To achieve that goal, it is necessary that 90% of girls will have to be fully vaccinated with the HPV vaccine by the age of 15.

To that end, the government’s intent to introduce the HPV vaccine in the Universal Immunisation Programme (UIP) is a welcome move. India’s immunisation network, as was evident during COVID-19, has worked well, and diseases such as polio and maternal and neonatal tetanus have been eliminated. The UIP is one of the largest public health programmes targeting over 2 crore new borns and 2 crore pregnant women annually, and offers free vaccines for at least 12 diseases. To battle cervical cancer, India is expected to roll out the indigenously developed Cervavac vaccine by mid-2023. It has received the Drugs Controller General of India’s approval and has been cleared by the National Technical Advisory Group for Immunisation for use in the UIP programme. The vaccination will be provided primarily through schools, but importantly the government has clarified that girls who do not go to school will be reached through community outreach and mobile teams. This is a vital step because studies show that there is a link between cervical cancer incidence and human development index values, with progressively lower rates observed as HDI rises. Together with vaccination, screening programmes must be conducted to detect early signs of the disease to allow time for treatment.

‘Promote HPV vaccine to prevent cervical cancer’ Expert advocates screening even after vaccination



Human papillomavirus (HPV) vaccines must be widely advocated and administered to prevent cervical cancer, said Sudha Sundar, Professor of Gynaecological Oncology at University of Birmingham and President of British Gynaecological Cancer Society.

As per ‘Recent challenges in gynaecological oncology– challenges and opportunities,’ expert says if India could completely eradicate polio through vaccination it certainly had the potential to reduce the incidence of cervical cancer too by vaccinating girl children.

“The vaccine is entirely safe; says experts. Highlighting the incidence of uterine cancer has gone up significantly in the U.K. and India could also be witnessing a similar trend soon. Obesity was proving to be an important risk factor for uterine cancer.

Artificial intelligence, machine learning, genomics, molecular stratification, and precision medicine are already improving the efficiency of cancer treatment.

E. Hemanth Raj, Executive Vice-Chairman, Cancer Institute, Adyar, highlighted how the incidence of cervical cancer had come down in the country while the incidence of breast cancer had significantly gone up.

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