



Cervical cancer is malignant neoplasm of the cervix uteri or cervical area. One of the most common symptoms is abnormal vaginal bleeding, but in some cases there may be no obvious symptoms until the cancer is in its advanced stages. Treatment consists of surgery (including local excision) in early stages and chemotherapy and radiotherapy in advanced stages of the disease.

Pap smear screening can identify potentially precancerous changes. Treatment of high grade changes can prevent the development of cancer. In developed countries, the widespread use of cervical screening programs has reduced the incidence of invasive cervical cancer by 50% or more.<sup>1</sup>

Human papillomavirus (HPV) infection is a necessary factor in the development of almost all cases of cervical cancer. HPV vaccines effective against the two strains of HPV that currently cause approximately 70% of cervical cancer have been licensed in the U.S, Canada, Australia and the EU. Since the vaccines only cover some of the cancer causing ("high-risk") types of HPV, women should seek regular Pap smear screening, even after vaccination.

The cervix is the narrow portion of the uterus where it joins with the top of the vagina. Most cervical cancers are squamous cell carcinomas,

arising in the squamous (flattened) epithelial cells that line the cervix. Adenocarcinoma, arising in glandular epithelial cells is the second most common type. Very rarely, cancer can arise in other types of cells in the cervix.

## **Signs and symptoms**

The early stages of cervical cancer may be completely asymptomatic. Vaginal bleeding, contact bleeding or (rarely) a vaginal mass may indicate the presence of malignancy. Also, moderate pain during sexual intercourse and vaginal discharge are symptoms of cervical cancer. In advanced disease, metastases may be present in the abdomen, lungs or elsewhere.

Symptoms of advanced cervical cancer may include: loss of appetite, weight loss, fatigue, pelvic pain, back pain, leg pain, single swollen leg, heavy bleeding from the vagina, leaking of urine or feces from the vagina, and bone fractures.

## **Causes**

Human papillomavirus (HPV) infection with high-risk types has been shown to be a necessary factor in the development of cervical cancer. HPV DNA may be detected in virtually all cases of cervical cancer. Not all of the causes of cervical cancer are known. Several other contributing factors have been implicated.

## **Human papillomavirus infection**

In the United States each year there are more than 6.2 million new HPV infections in both men and women, according to the CDC, of which 10 percent will go on to develop persistent dysplasia or cervical cancer. That is why HPV is known as the "common cold" of the sexually transmitted infection world. It is very common and affects roughly 80 percent of all sexually active people, whether they have symptoms or not. The most important risk factor in the development of cervical cancer is infection with a high-risk strain of human papillomavirus. The virus cancer link works by triggering alterations in the cells of the cervix, which can lead to the development of cervical intraepithelial neoplasia, which can lead to cancer.

Women who have many sexual partners (or who have sex with men who had many other partners) have a greater risk.

More than 150 types of HPV are acknowledged to exist (some sources indicate more than 200 subtypes).

Genital warts are caused by various strains of HPV which are usually not related to cervical cancer. However, it is possible to have multiple strains at the same time, including those that can cause cervical cancer along with those that cause warts. The medically accepted paradigm, officially endorsed by the American Cancer Society and other organizations, is that a patient must have been infected with HPV to develop cervical cancer, and is hence viewed as a sexually transmitted disease (although many dispute that, technically, it is the causative agent, not the cancer, that is a sexually transmitted disease), but most women infected with high risk HPV will not develop cervical cancer. Use of condoms reduces, but does not always prevent transmission. Likewise, HPV can be transmitted by skin-to-skin-contact with infected areas. In males, there is no commercially available test for HPV, although HPV is thought to grow preferentially in the epithelium of the glans penis, and cleaning of this area may be preventative<sup>1</sup>

There has not been any definitive evidence to support the claim that circumcision of the male partner reduces the risk of cervical cancer, although some researchers say there is compelling epidemiological evidence that men who have been circumcised are less likely to be infected with HPV. However, in men with low-risk sexual behavior and monogamous female partners, circumcision makes no difference to the risk of cervical cancer.

## **Diagnosis**

### **Biopsy procedures**

While the pap smear is an effective screening test, confirmation of the diagnosis of cervical cancer or pre-cancer requires a biopsy of the cervix. This is often done through colposcopy, a magnified visual inspection of the cervix aided by using a dilute acetic acid (e.g. vinegar) solution to highlight abnormal cells on the surface of the cervix.

Colposcopic impression, the estimate of disease severity based on the visual inspection, forms part of the diagnosis.

Further diagnostic and treatment procedures are loop electrical excision procedure (LEEP) and conization, in which the inner lining of the cervix is removed to be examined pathologically. These are carried out if the biopsy confirms severe cervical intraepithelial neoplasia.