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Gynecologic Cancers

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Abstract

Gynecologic cancer is initiated in female reproductive organs at different locations within woman's pelvis. Based on the location and the type of tissue where cancer develops, gynaecological cancers are of various types such as Womb cancer that occurs in the endometrium (womb lining), while Ovarian cancer occurs in ovaries however many ovarian cancers begin in Fallopian tubes. Cancerous ovarian tumours usually develop from three majors types of ovarian cells which are surface epithelial cells, stromal and Germ cells. During the initial stage cells in the ovary start to change and grow abnormally and at later stages the cancer spread to the abdomen and pelvis (peritoneal cavity).

Cervical cancer occurs in cervix, lower narrow end part of the uterus while Vaginal cancer is a squamous cancer in which cells change their growth pattern and structure, to develop into a lesion or tumour. Of note, it is interesting to point out that both vaginal cancer and squamous cervical cancers are associated with a common sexually transmitted infection caused by human papillomavirus (HPV),spread through sexual contact from skin to skin results in development of abnormal cells, which could later become cancerous over time. Also, Vaginal intraepithelial neoplasia (VAIN) is closely linked to having a persistent HPV infection, developing abnormal cells that might become cancerous overtime. The exact pathological mechanism and molecular links between HPV infection and gynaecological cancers are being studied by many groups for developing better diagnostic and therapeutic strategies for cervical and vaginal cancers.

Vulvar cancer occurs in the outer part of the female genital organs. Skin conditions causing inflammation may develop into an early vulval cancer however all changes that occur in cells of vulva may not account for developing cancer. Differentiated VIN (dVIN) associated with skin conditions affecting the vulva is more likely to be associated with cancer.

Keywords

Womb cancer; Ovarian cancer; Vulval cancer; Vaginal cancer; Transvaginal ultrasound (TVU); Biopsy; Radical wide local excision; Radical partial vulvectomy; Radical vulvectomy; Partial vaginectomy; Radical vaginectomy; Radical vaginectomy; Radical hysterectomy; Positive emission tomography (PET).

Statistics

Looking at the statistics gives us a better idea about the prevalence of gynaecological cancer. Of the total 2.9 million cancer deaths worldwide among women, gynaecological cancer (excluding vagina, vulva and placental malignancies) accounted for 15.3% deaths; of the total 5-year prevalent cases, gynaecological cancer accounted for 20.9% cases. Cervical cancer is the fourth most common cancer in women. WHO states that in 2018, an estimated 570 000 women were diagnosed with cervical cancer worldwide and about 311 000 women died from the disease.

The potential risk and incidence of developing gynaecological cancer also varies with race/ethnicity. In an interesting study by United States Cancer Statistics (USCS) to understand the association between incidence rate of gynaecologic cancers among women varied by cancer type and race/ethnicity. The most common gynaecologic cancer was uterine cancer (26.82 cases per 100,000) and the least common was vaginal cancer (0.66 per 100,000). The highest incidence rate of cervical cancer was among Hispanic women (9.60 per 100,000). White women had the highest incidence rate of uterine (27.16 per 100,000), ovarian (11.50 per 100,000), and vulvar (2.80 per 100,000) cancer. The highest incidence rate of vaginal cancer was among black women (0.90 per 100,000).

Such clinical studies involving subjects of different ethnicities are crucial to generate large numbers of data cohorts and which are utilized for developing prediction models using statistical tools. Based on these models a screening strategy can be developed for women of different ethnicities who are at potential risk of developing different types of gynaecological cancers. This can have potential applications in early prediction and diagnosis, ultimately providing a generous time for treatment.

Diagnosis

Recently several diagnostic methods have been developed for the diagnosis of different gynaecological cancers including but not limited to, Transvaginal ultrasound, pelvicexaminations and Papanicolaou (Pap) tests, blood tests, Ultrasound and CT scan be used for diagnosing different types of cancers. These diagnostic methods are crucial for early detection of gynaecological cancers and improving the efficiency of treatment.

Transvaginal ultrasound (TVU) uses a small scanner, to obtain a detailed picture of the inside of the uterus by placing it directly into the vagina. It examines if any changes are present at the thickness of the lining of uterus that could be due to presence of cancerous cells.

Regular pelvic examinations and Papanicolaou (Pap) tests or other similar tests can lead to the early detection of certain gynaecologic cancers such as cancer of the cervix, vagina and vulva. Such examinations prevent cancer by detecting precancerous changes (dysplasia). Biopsy involves removing a small sample of tissue is removed and examined under a microscope to determine the changes present. It involves a minor surgical procedure, a small part of tissue is biopsied. Hysteroscopy (internal examination of the womb) is conducted before under-going dilation and curettage.

Blood test for a protein called CA125.CA125 is an enzyme produced due to irritation to tissues in the peritoneal cavity. A very high amount of CA125 indicates presence of ovarian cancer. The CT scan helps to decide on the best kind of ovarian cancer treatment. Ultrasound scan uses high-frequency sound waves to create an image of ovaries.An internal or external ultrasound where either the probe

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is inserted into the vagina or the probe is rolled over the skin of abdomen. The image shows, size and texture of ovaries, also if any cysts or other abnormalities are present.

Treatment

Early detection of cancer facilitates better treatment options and recovery rates in many cases. Staging a cancer helps to choose the treatment. Some commonly used procedures to determine the stage of the cancer, include ultrasonography, computed tomography (CT), magnetic resonance imaging (MRI), chest x-rays, and positive emission tomography (PET)

With recent technological advancements in medical procedures there are several treatments options based on type and stage of cancer. Hysterectomy, surgical removal of the womb, can cure the cancer in early stages, but one can no longer be able to menstruate or get pregnant. Surgery may sometimes include the removal of the ovaries and Fallopian Tubes. Type of surgery for removal of cancer depends on the stage of cancer, Radical wide local excision, Radical partial vulvectomy, Radical vulvectomy, Partial vaginectomy, Radical vaginectomy, Radical vaginectomy and radical hysterectomy, Pelvic exenteration are a few types of surgical procedures for different types of gynaecological cancers.

Radiotherapy or chemotherapy are used, often in conjunction with surgery. Ovarian cancer can be treated by a combination of chemotherapy and surgery. It involves removing both ovaries and the fallopian tubes or the womb.

When a gynaecologic cancer is very advanced and a cure is not possible, radiation therapy or chemotherapy may still be recommended to reduce the size of the cancer or its metastases and to relieve pain and other symptoms. Appropriate drugs can be used to relieve the anxiety and pain commonly experienced by people with incurable cancer.

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