

BREAST
CANCER
HUBSM

Age:14-15

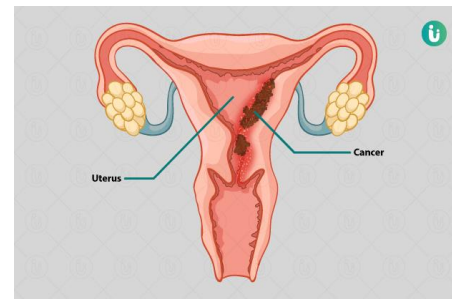
Team CARE

“Unmentionable” Uterine Cancer

Ashna Shah, Dhanya Gundala, Rachana Rao
Cox Mill High School, Lake Norman Charter High School,
Mallard Creek High School

Corresponding author:
Dr. Lopamudra Das Roy
Questions, please reach out:
lopa@breastcancerhub.org

1. What Is Endometrial Cancer?



Endometrial cancer is a type of cancer that begins in the uterus, a ,hollow, pear-shaped pelvic organ in women. Endometrial cancer begins in the layer of cells that form the lining (endometrium) of the uterus. Our aim is to inform people about the cancer, so that they can be aware in the future and apply the information if needed. Throughout this project, we had to do a lot of research on various websites, such as PubMed and Mayo Clinic. We have learned so many things from signs and symptoms, all the way to worldwide demographics. This was a very interesting project and we feel confident about the information on all the slides.

2. Signs, symptoms, and risk factors

Signs and symptoms of uterine cancer include vaginal bleeding after menopause, bleeding between periods, an abnormal, watery or blood-tinged discharge from your vagina, and pelvic pain.

Risk factors of uterine cancer include changes in the balance of female hormones in the body, more years of menstruation, never having been pregnant, older age, obesity, hormone therapy for breast cancer, and an inherited colon cancer syndrome.

3. Causes

There is no known cause for endometrial cancer, but doctors do know that something occurs in the cells in the endometrium, the lining of the uterus, that change, or mutate, the DNA of those cells. The mutation turns healthy cells into abnormal cells, which grow and multiply out of control rather than at a set rate. As these abnormal cells accumulate, they form a mass, also known as a tumor, in the uterus. Thereafter, these cancer cells invade nearby tissues and can separate from the initial tumor in order to spread to other parts of the body (metastasize).

4. The Stages of Uterine Cancer

Stage 0: Cancer cells are present on surface and have not grown into the layers of cells below.

Stage 1: Cancer is only growing in the uterus. Starts off in the endometrium(Inner lining of the uterus) and may grow farther below to the underlying muscle of the uterus.

Stage 2: Cancer is growing into supporting tissue called the Cervical stroma

Stage 3: There are four different subcategories for this stage:

- Stage A: The cancer has spread to the outer surface of the uterus which is called the serosa.
- Stage B: Cancer has spread to the vagina or to the tissues around the uterus called the parametrium.
- Stage C: The cancer has now spread to the Pelvic lymph nodes

Stage 4: Spread farther into the urinary bladder and gone all the way to the organs away from the uterus such as the bones and lungs.

5. Genetics

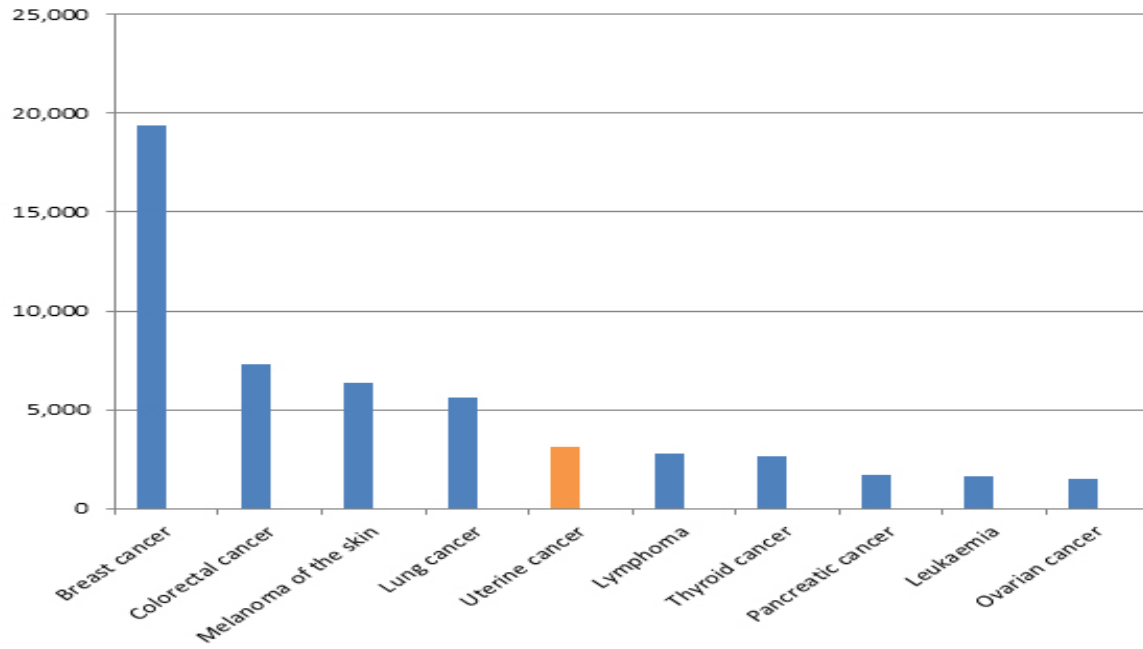
Uterine cancer may run in families where colon cancer is hereditary. Women in families with Lynch syndrome have a higher risk of uterine cancer. Lynch syndrome is an inherited disorder that increases the risk of many types of cancer. The specific genes that cause endometrial cancer are *MLH1*, *MSH2*, *MSH6*, and *PMS2*. Many people recommend that women under the age of 60 with endometrial cancer have their tumor tested for Lynch syndrome. About 2% to 5% of women with endometrial cancer have this hereditary disorder.

6. 2019 Statistics for Uterine Cancer

Uterine Cancer is the fifteenth leading cause of cancer deaths in the United States. The American Cancer Society estimates for cancer of the uterus in the United States for 2019 to be about 61,880 new cases of people diagnosed. About 12,160 women will die from cancers of the uterus.

According to the national cancer institute, This type of cancer is more likely in women aged between 55-64. The Median age of deaths is 70 years old. Keeping track of the number of new cases, deaths, and survival over time (which is called trends) can help scientists understand whether progress is being made to find treatments and where additional research is needed to address challenges, such as improving screening.

Number of new cases



7. Diet

Women who eat foods high in animal fat may have an increased risk of uterine cancer. Maintaining a healthy weight is a simple way to prevent the risk of uterine cancer. Consuming lentils, garlic, leafy greens, tomatoes, grapes, and onions will help reduce the risk of getting uterine cancer. Vegetables are a very high fiber, low calorie food which can provide cancer fighting compounds and assist with the feeling of fullness.

Breakfast: Top your cereal off with berries or make a spinach omelet.

- **Lunch: Layer sandwiches with greens, tomatoes and cucumber. Have raw vegetables on the side instead of chips.**
- **Dinner: always include a colorful salad and aim to fill half your dinner plate with non-starchy vegetables like steamed asparagus, broccoli and carrots.**
- **Snacks: Try baby carrots, sugar-snap peas and sliced red peppers dipped into hummus.**

9. Current Treatment Modules

Surgery: Surgery is a method of treatment involving an operation that will remove the uterus (hysterectomy), often along with the ovaries and fallopian tubes (salpingo-oophorectomy). Removing these will make it impossible to get pregnant and will result in menopause.

Chemotherapy: Chemotherapy uses drugs to kill cancer cells. The drugs go into the bloodstream and travel throughout the body, killing cancer cells. Due to this, chemotherapy is often part of the treatment when the endometrial cancer has spread to other parts of the body. Chemotherapy can also be used before surgery to shrink the cancer so that it is more likely to remove completely, or after surgery if there is a high risk that the cancer may return.

10. Current Treatment Modules - Part 2

Radiation Therapy: Radiation therapy uses powerful radiation to kill cancer cells. This treatment is mostly used after surgery to kill any remaining cancer cells, but it can also be given before surgery to help shrink a tumor. Women who are not healthy enough for surgery may use this as their main treatment. This therapy can be given through internal radiation therapy (brachytherapy), which is done by placing radioactive materials inside the body, or external beam radiation therapy, which uses a machine that directs beams of radiation at the tumor in the body. In some situations, both types of therapy may be used, but this is determined by the stage and grade of the cancer.

11. Current Treatment Modules - Part 3

Hormone Therapy: Hormone therapy uses medications to lower the hormone levels in the body. This treatment is often used along with chemotherapy. As a result of this therapy, cancer cells that depend on these hormones to grow may die. This type of therapy is mostly used to treat endometrial cancer that is at an advanced stage or has come back after treatment.

Immunotherapy: Immunotherapy is a type of treatment that used drugs to help your immune system better recognize and kill cancer cells. This type of treatment can be used to treat endometrial tumors that are not responding to other treatments or have come back after treatment.

12. Current Treatment Modules - Part 4

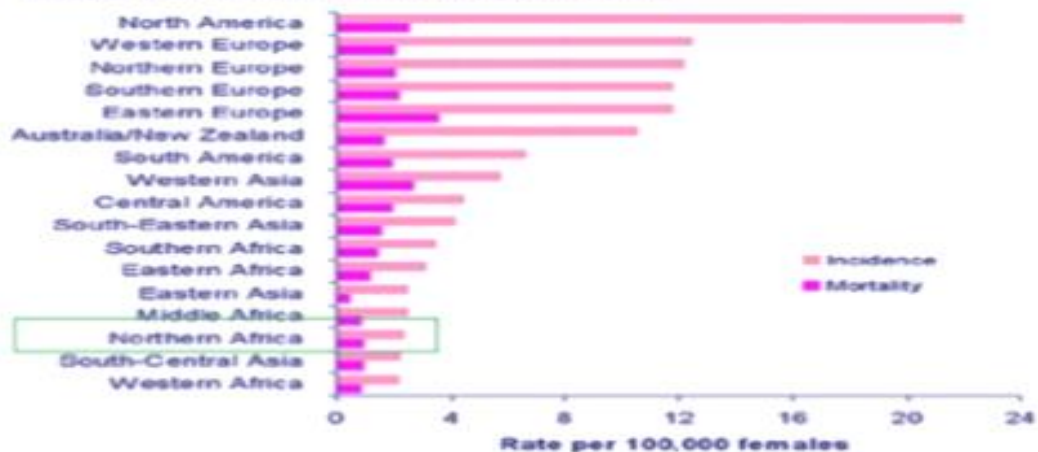
Targeted Drug Therapy: Targeted therapy is treatment with drugs that are made to target certain changes in cancer cells. Targeted therapy is relatively new in treatments for certain types of endometrial cancer and only a few drugs are being used at this time as a part of a clinical trial, but many more drugs are being studied. Today, these drugs are used to treat high-risk endometrial cancers and those that have spread or come back after treatment. As doctors continue to learn more about endometrial cancer cells, targeted therapy may become an important part of treatment for endometrial cancer.

13. Ethnicity, Race, & Worldwide Demographics

The study by the Journal of the National Cancer Institute, showed that rates of uterine cancer vary widely among countries. Rates are highest in North America and Europe and lowest in middle-income countries, such as India and South Africa. White women have higher incidence rates of endometrial cancer than any other ethnic group in the United States and, in particular, in 2019 the rate in African Americans was only 74 percent that of Whites. In contrast, African Americans had a mortality rate from endometrial cancer that was 79 percent greater than the rate in Whites. As of 2019, there are about 61,880 cases of uterine cancer in the United States. American women are at higher risk of getting uterine or endometrial cancer because of diet. Consuming fatty foods, which are consumed more in America, can lead to excess fatty hormones like estrogen. That excess of estrogen is one of the biggest causes of uterine and endometrial cancer. Uterine cancer is the 15th most common cancer worldwide. Based on this table, the countries with the highest incidence rates are in North America.

Worldwide incidence and mortality

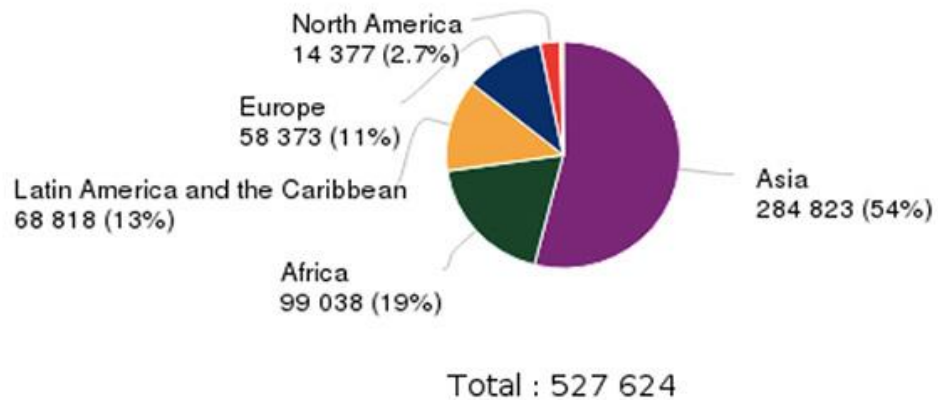
Figure 1.3: World age-standardised incidence and mortality rates of corpus uteri cancer, selected regions, 2002



14. Cervical Cancer

Cervical cancer is the fourth most frequent cancer in women with an estimated 570,000 new cases in 2018 representing 6.6% of all female cancers. Approximately 90% of deaths from cervical cancer occurred in developing, low- and middle-income countries. Unlike many cancers, cervical cancer can be prevented. Primary prevention of cervical cancer is through preventing human papillomavirus (HPV), a sexually transmitted infection that causes cervical cancer. The correlations between the incidence rate of cervical cancer and developing countries are taboo, lack of education, ignorance, and poverty. Women could be embarrassed to go seek a diagnosis and treatment, they could not get assistance due to lack of money, or they might not even know what is happening and completely ignore symptoms. Cervical cancer can be prevented by spreading education about this cancer and by raising awareness on this subject.

Estimated number of incident cases, cervical cancer, worldwide in 2012



Data source: GLOBOCAN 2012
Graph production: Global Cancer Observatory (<http://gco.iarc.fr/>)
© International Agency for Research on Cancer 2018

References

1. Endometrial cancer. (2019, July 25). Retrieved from <https://www.mayoclinic.org/diseases-conditions/endometrial-cancer/symptoms-causes/syc-20352461>
2. Anon, (2019). [online] Available at: <https://www.mayoclinic.org/diseases-conditions/endometrial-cancer/diagnosis-treatment/drc-2052466> [Accessed 13 Sep. 2019].
3. SEER. (2019). Cancer of the Endometrium - Cancer Stat Facts. [online] Available at: <https://seer.cancer.gov/statfacts/html/corp.html> [Accessed 13 Sep. 2019].
4. National Cancer Institute. (2019). Endometrial Cancer Incidence Rising Worldwide. [online] Available at: <https://www.cancer.gov/news-events/cancer-currents-blog/2017/endometrial-cancer-incidence-rising> [Accessed 13 Sep. 2019].
5. Cancer.org. (2019). Treating Endometrial Cancer. [online] Available at: <https://www.cancer.org/cancer/endometrial-cancer/treating.html> [Accessed 13 Sep. 2019].
6. World Cancer Research Fund. (2019). Endometrial cancer statistics. [online] Available at: <https://www.wcrf.org/dietandcancer/cancer-trends/endometrial-cancer-statistics> [Accessed 13 Sep. 2019].
7. Althubiti, M. A. (2019). Mutation Frequencies in Endometrial Cancer Patients of Different Ethnicities and Tumor Grades: An Analytical Study. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/30787852>

References

- 8.** Surgery for Endometrial Cancer. (n.d.). Retrieved from <https://www.cancer.org/cancer/endometrial-cancer/treating/surgery.html>
- 9.** Uterine Cancer - Risk Factors and Prevention. (2019, June 5). Retrieved from <https://www.cancer.net/cancer-types/uterine-cancer/risk-factors-and-prevention>
- 10.** Cancer of the Endometrium - Cancer Stat Facts. (n.d.). Retrieved from <https://seer.cancer.gov/statfacts/html/corp.html>
- 11.** Radiation Therapy for Endometrial Cancer. (n.d.). Retrieved from <https://www.cancer.org/cancer/endometrial-cancer/treating/radiation.html>
- 12.** Understand how Uterine Cancer is Staged. (2019, July 30). Retrieved from <https://www.cancercenter.com/cancer-types/uterine-cancer/stages>
- 13.** Chemotherapy for Endometrial Cancer. (n.d.). Retrieved from <https://www.cancer.org/cancer/endometrial-cancer/treating/chemotherapy.html>
- 14.** Hormone Therapy for Endometrial Cancer. (n.d.). Retrieved from <https://www.cancer.org/cancer/endometrial-cancer/treating/hormone-therapy.html>
- 15.** Nci, Nci, & Nci. (n.d.). Endometrial Cancer Incidence Rising Worldwide. Retrieved from <https://www.cancer.gov/news-events/cancer-currents-blog/2017/endometrial-cancer-incidence-rising>
- 16.** Immunotherapy for Endometrial Cancer. (n.d.). Retrieved from <https://www.cancer.org/cancer/endometrial-cancer/treating/immunotherapy.html>