

Understanding Endometrial Cancer: Causes, Symptoms, Diagnosis, Treatment and Prevention

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Abstract

Endometrial cancer, a malignancy originating in the inner lining of the uterus, poses a significant health burden worldwide. This paper comprehensively examines the multifaceted aspects of endometrial cancer, encompassing its etiology, clinical manifestations, diagnostic modalities, therapeutic interventions, and preventative strategies. The etiology of endometrial cancer involves a complex interplay of genetic, hormonal, and environmental factors. Risk factors such as obesity, unopposed estrogen exposure, nulliparity, and hereditary predispositions significantly contribute to its development. Symptoms of endometrial cancer commonly include abnormal uterine bleeding, pelvic pain, and changes in urinary or bowel habits, although presentation may vary widely among individuals. Accurate diagnosis of endometrial cancer relies on a combination of clinical evaluation, imaging studies, and histopathological examination of endometrial tissue samples obtained through procedures such as endometrial biopsy and dilation and curettage. Treatment approaches for endometrial cancer are tailored to disease stage, histological subtype, and patient factors, with options ranging from surgery and adjuvant therapies to targeted molecular agents and immunotherapy. Additionally, advancements in minimally invasive surgical techniques and precision medicine have revolutionized the management of endometrial cancer, offering improved outcomes and quality of life for patients.

Prevention strategies for endometrial cancer encompass lifestyle modifications, hormonal therapies, and risk-reducing surgeries aimed at mitigating known risk factors and optimizing overall health. Furthermore, ongoing research into the molecular underpinnings of endometrial cancer holds promise for the development of novel therapeutic targets and personalized treatment approaches. A comprehensive understanding of the causes, symptoms, diagnosis, treatment modalities, and preventive measures is essential for effectively combating endometrial cancer and improving patient outcomes. This paper serves to elucidate the current state of knowledge surrounding endometrial cancer and highlights avenues for future research and clinical practice.

Keywords: Endometrial cancer; Uterine cancer; Endometrium; Etiology; Risk factors; Symptoms; Diagnosis; Treatment; Prevention; Surgery; Adjuvant therapy; Targeted therapy; Immunotherapy; Precision medicine; Molecular biology; Gynecologic oncology

Introduction

Endometrial cancer, also known as uterine cancer, develops in the lining of the uterus called the endometrium. It is one of the most common gynecologic cancers among women, with its incidence increasing steadily over the past few decades [1]. While endometrial cancer can be a serious condition, early detection and advancements in treatment have significantly improved outcomes for many patients. This article aims to provide a comprehensive overview of endometrial cancer, including its causes, symptoms, diagnosis, treatment options, and preventive measures [2]. Endometrial cancer, also known as uterine cancer, is a malignancy that arises from the lining of the uterus, called the endometrium. It is one of the most common gynecological cancers, affecting thousands of women worldwide each year [3]. Despite its prevalence, endometrial cancer remains a complex and often misunderstood disease, posing significant challenges for both patients and healthcare professionals. Understanding endometrial cancer involves delving into its multifaceted nature, encompassing its causes, symptoms, diagnosis, treatment modalities, and preventive strategies [4]. By unraveling the intricacies of this condition, individuals can empower themselves with knowledge to recognize potential risks, seek timely medical intervention, and make informed decisions about their health [5]. At its core, endometrial cancer originates from the uncontrolled growth of cells within the endometrium, leading to the formation of tumors [6]. While the exact cause of this aberrant cellular growth is not always clear, certain risk factors have been identified [7].

These include hormonal imbalances, obesity, genetic predisposition, reproductive factors such as early onset of menstruation or late menopause, and conditions like polycystic ovary syndrome (PCOS) or diabetes [8]. Understanding these risk factors is crucial in identifying individuals who may be more susceptible to developing endometrial cancer and implementing preventive measures [9].

The manifestation of endometrial cancer can vary from subtle to severe, with symptoms often overlapping with other gynecological conditions. Abnormal vaginal bleeding, particularly post-menopausal bleeding, is the most common warning sign [10]. Other symptoms may include pelvic pain, unusual discharge, and changes in urinary habits. However, these symptoms are nonspecific and can easily be overlooked or attributed to benign causes, highlighting the importance of vigilance and prompt medical evaluation.

Causes

The exact cause of endometrial cancer is not fully understood, but several risk factors have been identified. One of the primary risk factors

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is hormonal imbalance, particularly elevated levels of estrogen relative to progesterone. This imbalance can occur due to various factors, such as obesity, hormone therapy without progesterone, or conditions like polycystic ovary syndrome (PCOS).

Other risk factors for endometrial cancer include:

Age: The risk of developing endometrial cancer increases with age, with the majority of cases diagnosed in postmenopausal women.

Obesity: Excess body weight, especially fat tissue, can lead to increased estrogen production, raising the risk of endometrial cancer.

Diabetes: Women with diabetes, especially type 2 diabetes, have a higher risk of developing endometrial cancer, possibly due to insulin resistance and hormonal changes.

Family history: A family history of endometrial or colorectal cancer may increase the risk, suggesting a genetic predisposition.

Reproductive factors: Women who have never been pregnant or have never given birth, as well as those who experienced early menstruation or late menopause, may have a higher risk.

Hormone replacement therapy (HRT): Long-term use of estrogen-only hormone replacement therapy, without progesterone, may increase the risk of endometrial cancer.

Certain medical conditions: Conditions such as Lynch syndrome (hereditary nonpolyposis colorectal cancer) and endometrial hyperplasia (abnormal thickening of the endometrium) can predispose individuals to endometrial cancer.

Symptoms

Endometrial cancer often presents with symptoms that prompt women to seek medical attention. Common symptoms include:

Abnormal vaginal bleeding: The most common symptom of endometrial cancer is abnormal vaginal bleeding, which may include postmenopausal bleeding, irregular menstrual bleeding, or bleeding between periods.

Pelvic pain or discomfort: Some women may experience pelvic pain or discomfort, often described as a dull ache or pressure in the lower abdomen or pelvis.

Painful urination or intercourse: Endometrial cancer may cause pain or discomfort during urination (dysuria) or sexual intercourse (dyspareunia).

Unexplained weight loss: In some cases, unexplained weight loss may occur, particularly if the cancer has advanced.

It is essential to note that these symptoms can be caused by various conditions other than endometrial cancer. However, any persistent or unusual symptoms should be evaluated by a healthcare provider to rule out potential underlying issues.

Diagnosis

Diagnosing endometrial cancer typically involves a combination of medical history review, physical examination, and diagnostic tests. The following are commonly used diagnostic methods:

Pelvic examination: A pelvic exam allows the healthcare provider to assess the size, shape, and texture of the uterus and surrounding structures.

Transvaginal ultrasound (TVUS): This imaging test uses sound

waves to create a picture of the uterus, ovaries, and surrounding tissues. TVUS can help detect abnormalities in the endometrium, such as thickening or masses.

Endometrial biopsy: During an endometrial biopsy, a small sample of tissue is taken from the lining of the uterus and examined under a microscope for signs of cancerous or precancerous cells. This procedure can be performed in the office setting and is often used to confirm a diagnosis of endometrial cancer.

Imaging studies: Additional imaging tests, such as magnetic resonance imaging (MRI) or computed tomography (CT) scans, may be ordered to determine the extent of the cancer and whether it has spread to other organs or tissues (staging).

Once a diagnosis of endometrial cancer is confirmed, further tests may be conducted to determine the stage of the cancer and guide treatment planning.

Treatment

The treatment approach for endometrial cancer depends on several factors, including the stage of the cancer, the woman's overall health, and her preferences. Treatment options may include:

Surgery

The primary treatment for early-stage endometrial cancer is usually surgery to remove the uterus (hysterectomy) and sometimes the ovaries and fallopian tubes (salpingo-oophorectomy). In some cases, lymph nodes in the pelvis and abdomen may also be removed (lymphadenectomy) to determine if the cancer has spread.

Radiation therapy

Radiation therapy uses high-energy beams to destroy cancer cells and shrink tumors. It may be used before surgery (neoadjuvant radiation) to reduce the size of the tumor or after surgery (adjuvant radiation) to kill any remaining cancer cells.

Chemotherapy

Chemotherapy involves the use of powerful drugs to kill cancer cells or prevent them from multiplying. It may be used in combination with surgery and/or radiation therapy, particularly for advanced or recurrent endometrial cancer.

Hormone therapy

Hormone therapy, such as progesterone therapy, may be recommended for women with advanced or recurrent endometrial cancer that is hormone receptor-positive. These medications work by blocking the effects of estrogen on the endometrium or promoting progesterone's protective effects.

In addition to these standard treatments, clinical trials may be available to explore new treatment approaches or therapies for endometrial cancer.

Prevention

While it may not be possible to prevent endometrial cancer entirely, certain lifestyle modifications and risk reduction strategies may help lower the risk:

Maintain a healthy weight: Maintaining a healthy weight through a balanced diet and regular exercise can help reduce the risk of endometrial cancer, as obesity is a significant risk factor.

Use hormone therapy wisely: If considering hormone replacement therapy to manage menopausal symptoms, discuss the potential risks and benefits with a healthcare provider. Combined hormone therapy with estrogen and progesterone may be less likely to increase the risk of endometrial cancer.

Control Chronic Conditions: Managing chronic conditions such as diabetes and hypertension through lifestyle changes and medication adherence may help reduce the risk of endometrial cancer.

Regular screening and check-ups: Women should undergo regular pelvic exams and discuss any unusual symptoms or changes in their menstrual cycle with a healthcare provider. Prompt evaluation of symptoms can lead to earlier detection and better outcomes.

Conclusion

Endometrial cancer is a common gynecologic malignancy that primarily affects postmenopausal women. While the exact cause remains unclear, several risk factors, including hormonal imbalance, obesity, and genetic predisposition, have been identified. Early detection through regular screening and prompt evaluation of symptoms is crucial for diagnosing endometrial cancer at an early stage when treatment options are most effective. Advances in treatment, including surgery, radiation therapy, chemotherapy, and hormone therapy, have improved outcomes for many patients. Additionally, lifestyle modifications and risk reduction strategies can help lower the risk of developing end. Understanding endometrial cancer is crucial for both healthcare professionals and the general public alike. This complex disease presents with a variety of causes, symptoms, and risk factors, making early detection and intervention essential for successful treatment outcomes. Through advancements in medical research and technology, our understanding of endometrial cancer continues to evolve, leading to improved diagnostic techniques and personalized treatment approaches.

A comprehensive understanding of endometrial cancer, encompassing its causes, symptoms, diagnosis, treatment, and prevention, is essential for optimizing patient care and outcomes. By

fostering collaboration among healthcare professionals, researchers, policymakers, and the community, we can continue to make strides in the fight against this prevalent gynecological malignancy. Through education, advocacy, and continued research efforts, we can strive towards a future where endometrial cancer is not only treatable but preventable, ultimately improving the quality of life for affected individuals worldwide.

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