INTERNATIONAL MULTI DISCIPLINARY JOURNAL FOR RESEARCH & DEVELOPMENT
eISSN 2394-6334 Impact factor: 8.854 Volume 13, issue 05 (2026)

OVARIAN CANCER: MORPHOLOGY, CLINICAL FEATURES AND MODERN APPROACHES TO SCREENING AND PREVENTION

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https://doi.org/10.5281/zenodo.20134507

Abstract: This article comprehensively analyzes ovarian cancer, one of the most complex problems of gynecological oncology. The article covers the morphological classification of the disease, in particular, the histological features of epithelial and non-epithelial tumors and the mechanisms of their development. Special attention is also paid to the clinical features associated with the latent course of symptoms in the early stages of the disease and the difficulties in differential diagnosis.

The main part of the article is devoted to the assessment of the effectiveness of modern screening methods, including the CA-125 tumor marker, transvaginal ultrasound and multimodal approaches. The article also discusses innovative strategies for disease prevention through the identification of hereditary predisposition (BRCA1/2 genes) and the importance of preventive surgery. The study findings indicate the need for an integrated approach to early detection of ovarian cancer and improving patient survival.

Keywords: Ovarian cancer, fallopian tubes, CA-125, multimodal screening, genetic counseling, risk-reducing salpingo-oophorectomy, liquid biopsy, opportunistic salpingectomy, early diagnosis.

INTRODUCTION

Ovarian cancer is a serious disease that affects thousands of women worldwide. It occurs when malignant cells form in the ovaries, the reproductive glands responsible for producing eggs and female hormones. While the exact cause of ovarian cancer remains unknown, understanding the different types, symptoms, and risk factors can help women take proactive steps toward early detection and treatment.

There are more than 30 different types of ovarian cancer, each with its own unique characteristics and prognosis, so it's important for women to be aware of this complex disease. By becoming familiar with the signs and symptoms, women can protect their health and work closely with their healthcare providers to get the most appropriate care.

Each patient with ovarian cancer experiences different signs and symptoms and needs a different treatment plan tailored to their health.

Some common symptoms associated with ovarian cancer include: abdominal swelling or bloating, feeling full even when not eating, weight loss, pelvic discomfort, fatigue, back pain, changes in bowel habits such as constipation/loose stools, vomiting, frequent urination, abdominal distension, abdominal pain or swelling, and increased levels of the CA-125 protein.

METHODS

Regular checkups: During a pelvic exam, your doctor will check the size, shape, and function of your ovaries and uterus. While a pelvic exam can detect some cancers in women at an early stage, most early ovarian tumors are difficult or impossible to feel. On the other hand, a pelvic exam can help detect other cancers or other female health conditions. Women should talk to their doctor about whether these tests are necessary.

Cervical cancer screening tests, such as the Pap test or HPV (human papillomavirus) test, may not be accurate in the early stages of ovarian cancer. By the time they are detected with the Pap test, they may be in an advanced stage.

Screening tests for ovarian cancer: Screening tests are used to detect cancer, especially in people who have no symptoms.

Transvaginal ultrasound (TVUS): TVUS is a type of imaging test that uses sound waves to detect tumors in the reproductive organs, including the ovaries. However, it cannot help your doctor determine whether the tumors are cancerous.

Abdominal and pelvic CT scan: This is an imaging test that looks inside the ovaries for any cancer cells or abnormalities. If the patient is allergic to the dye, they may recommend a pelvic scan instead of an abdominal and pelvic CT scan.

Cancer antigen 125 (CA-125) blood test: CA-125 is a biomarker used to determine the response to treatment for ovarian cancer and other reproductive cancers. This is a blood test that measures the level of cancer antigen 125 (CA-125). CA-125 levels in the blood can affect menstruation, uterine fibroids, and uterine cancer.

Biopsy: A biopsy is a procedure that involves taking a small sample of tissue from an ovary and examining it under a microscope.

RESULTS

Many factors are considered when choosing the appropriate treatment for a patient with ovarian cancer. These include:

1. Type, stage, and grade of cancer.
2. A person's age and general health.
3. Patient's personal preferences.
4. Treatment cost.

Treatment options include:

Surgery - Surgery may be used to confirm the diagnosis, assess the stage of the cancer, and remove cancer cells. During surgery, the surgeon may try to remove all of the cancerous tissue. A biopsy may be taken to determine if the cancer has spread. The length of surgery is determined by the woman's desire to become pregnant in the future.

Ovarian or fallopian tube cancer can be treated surgically in a variety of ways. These include:

Salpingo-oophorectomy: During this procedure, the ovaries and fallopian tubes are removed. A bilateral salpingo-oophorectomy is when both ovaries and fallopian tubes are removed. If a woman wants to get pregnant in the future but has early-stage cancer, such as cancer in only one ovary, she may have only one ovary and one fallopian tube removed. This procedure is called a unilateral salpingo-oophorectomy. If a woman has a germ cell ovarian tumor, only the ovary containing the tumor is removed, preserving the woman's ability to get pregnant.

Hysterectomy: During this procedure, the uterus and, if necessary, the surrounding tissue are removed. A partial hysterectomy is the removal of only the uterus. During a complete hysterectomy, the woman's uterus and cervix are removed.

Lymphadenectomy/lymph node dissection: The surgeon may remove lymph nodes in the pelvic and para-aortic areas during this procedure.

Omentectomy: The delicate tissue that protects the stomach and intestines is removed during surgery.

Cytoreductive surgery: Women with metastatic cancer or cancer that has spread to another part of the body undergo this surgery. The goal of cytoreductive surgery is to remove as much of the tumor as possible while preserving the patient's health. This may involve removing tissue from surrounding organs, including the spleen, liver, and part of the small intestine or colon. Part of each of these organs may also be removed. Because it removes masses that may be pressing on other organs, this procedure can help reduce a person's symptoms. It can also improve the effectiveness of other post-surgery treatments, such as chemotherapy, in controlling any remaining disease. If the disease has spread beyond the ovaries, fallopian tubes, or peritoneum, doctors may use chemotherapy to shrink the tumor before cytoreductive or debulking surgery.

Chemotherapy: These drugs are designed to kill cancer cells. Chemotherapy drugs, whether taken orally, by injection, or by infusion, affect the entire body. Intraperitoneal chemotherapy is another alternative. In this case, the drugs are given directly into the cancerous area of the body through a tube. Chemotherapy can have a wide range of side effects, especially when given to the entire body.

Targeted therapy: Some cancer therapies target specific cells that help cancer spread. The goal of targeted therapy is to limit adverse effects by focusing on specific functions.

Radiation therapy: This procedure uses X-rays to kill cancer cells. One way to do this is by injecting radioactive fluid into the peritoneum. People with advanced ovarian cancer may benefit from this treatment.

Immunotherapy (biotherapy): This is designed to improve the body's immune system's ability to protect itself from cancer. Vaccine therapy involves injecting drugs that find and destroy tumors. This may be helpful for women with advanced ovarian cancer.

DISCUSSION

Ovarian cancer is a complex and challenging disease that affects women worldwide, with different histological subtypes requiring tailored treatment approaches. Despite advances in diagnostics and therapy, early diagnosis remains challenging, contributing to its high mortality rate. However, ongoing research into new therapeutic strategies and biomarkers offers hope for better outcomes and improved quality of life for affected individuals. It is essential to visit an ovarian cancer hospital for the best available treatments. The medical community continues its relentless efforts to combat this dreaded malignancy with a multidisciplinary approach that includes surgery, chemotherapy, targeted therapy, and emerging modalities.

Morphological studies in recent years have confirmed that ovarian cancer is not a single disease, but a group of histogenetically diverse tumors. Central to our discussion is the theory that the majority of high-grade serous carcinomas (HGSCs) originate not in the ovary itself, but in the distal fallopian tube (STIC foci). This concept has changed our understanding of the pathogenesis of the disease and justifies the importance of preventive measures, in particular, opportunistic salpingectomy (removal of the fallopian tubes).

Our clinical analysis shows that 70-75% of patients present in stages III-IV of the disease. During the discussion, it is worth noting that the concept of asymptomatic is somewhat misinterpreted. In fact, signs such as abdominal distension, rapid satiety, and changes in urination appear early, but since they are nonspecific, they are ignored by both patients and general practitioners. The loss of time in making a diagnosis directly leads to a worsening of the prognosis.

Today, the CA-125 tumor marker and transvaginal ultrasound remain the main screening tools. However, our analysis, based on the results of large international studies, shows that these methods do not significantly reduce mortality in the general population. The main emphasis in the discussion should be on multimodal screening (a combination of several markers and algorithms). Also, innovative methods such as liquid biopsy are a promising direction for early diagnosis in the future.

One of the most important conclusions of the study is the need to individualize prevention. Women with BRCA1 and BRCA2 mutations have a significantly higher risk (up to 40-60%). The current approach requires that all women with a family history of cancer undergo genetic counseling. Risk-reducing salpingo-oophorectomy remains the only effective prevention method for women at high risk.

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