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## Ovarian tumors - epidemiology, diagnosis and prevention in Poland

Agata Ulenberg<sup>1</sup>, Grzegorz Ulenberg<sup>2</sup>

1. Clinical laboratory basic skills and simulation of medical, Medical College in Bydgoszcz, Nicolaus Copernicus University in Torun
2. Department nursing treatment, department nursing intensive care, Medical College in Bydgoszcz, Nicolaus Copernicus University in Torun

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### Summary

Ovarian cancer is one of the deadliest diseases plaguing women today. Morbidity and mortality is drastically high and unfortunately still growing. In many cases, the medicine is powerless. The very term cancer awakens in us the fear, uncertainty and significantly increases the level of stress. The disease is an element of human life, it is a drama for the patient and his family. For a time, completely changes the man and his subordinates pobytom life in the hospital and the next stages of therapy.

The aim of this work is to present the problems associated with the occurrence of ovarian

tumors. Presentation of ways of early diagnosis which can significantly increase the survival rate of women suffering.

The work shows how serious problem in modern gynecological oncology is constantly ovarian cancer. It is characterized by very high mortality rate among cancers of the female genital.

### **Admission**

Ovarian cancer is one of the deadliest diseases plaguing women today. Morbidity and mortality is drastically high and unfortunately still growing. In many cases, the medicine is powerless. The very term cancer awakens in us the fear, uncertainty and significantly increases the level of stress. The disease is an element of human life, it is a drama for the patient and his family. For a time, completely changes the man and his subordinates stays life in the hospital and the next stages of therapy.

It would seem that the widely propagated health promotion programs, easier access to specialists, properly maintained and constantly improved procedure and a special vigilance oncology, became a way to increase the detection of early forms of cancer. Unfortunately, it does not happen in the case of ovarian cancer.

S cancer, is still a very big problem in modern gynecology oncology. Unfortunately, it is most often diagnosed when advancement is already very large. Most patients report to the gynecologist in the III and IV clinical stage FIGO [International Federation of Gynecology and Obstetrics - The International Federation of Gynecology and Obstetrics].

Symptoms associated with ovarian cancer suggests the disease this organ. They are felt as symptoms suggestive of gastrointestinal disease.

Morbidity affects women of all ages. Increases around the age of menopause and, unfortunately sick children as well.

It is believed that the formation of ovarian tumors affecting hormonal factors, genetic and environmental factors. The incidence is higher in industrialized regions. They fall ill more often women who have not given birth or not breastfeed. To risk group also includes those who have had a family history of this disease. Which carry a mutation gene.

Less likely to get sick women who used hormonal contraception.

Ovarian cancer is recognized late, due to the lack of early detection programs. Continuous development of modern medicine allows the use of different diagnostic methods, but still the diagnosis comes too late.

Patients suspected of occurrence of ovarian cancer are performed ultrasound and radiology.

Among laboratory tests should determine the picture of peripheral blood, for the exponents of liver function and kidney function. It has important diagnostic markers of cancer in blood serum. Their concentration increases in tumor processes.

Preventive measures are a major issue. The establishment of such AND SOFTWARE could significantly speed up the detection of ovarian cancer within.

The basic form of screening, regular gynecological check-ups. Two-hand examination of the vagina and rectum, and transvaginal ultrasound. Patients in whom ovarian cancer family occurred should be tested for the carriers of mutations in the BRCA1 gene (breast cancer 1) and BRCA2 (breast cancer gene 2).

The importance of early cancer detection and appropriate treatment in these cases. Treatment requires teamwork, and especially diagnostic and individualization - therapeutic. Negotiations are always very different and largely depend precisely on the tumor stage.

The aim of this work is to present the problems associated with the occurrence of ovarian tumors. Presenting ways of early diagnosis which can significantly increase the survival rate of women.

### **Epidemiology of ovarian tumors**

In the modern world constantly ovarian cancer is a very big problem public. In highly developed countries is continuously saddled with one of the greatest mortality among malignant tumors of the female genital organs.

In Poland, ovarian cancer was ranked sixth at the incidence of cancer in women. Data from the National Council (National Cancer Registry) reported that it represented in 2014 4.6% of cases of cancer of the female population in Poland. [24, 25]

This means that every year in our country are recognized by about 2700 new cases per 100 thousand. women.

Taking into account deaths from gynecological cancers localized in the first place. The mortality rate of women in 2014. A cancer of the ovary was 5.8%, [20, 24].

Research carried out in the world shows that there is still a slow increase in the incidence of ovarian cancer.

At the time of diagnosis of ovarian cancer in 70% of cases, the disease is already very large. The location of the body inside the abdomen hinders proper and early diagnosis.

The decisive factor in the treatment and survival of a patient's age and severity.

For women suffer from ovarian cancer at any age, but the escalation of cases occur in the interval between 40 and 70 years of age. Very rare disease before age 30. [9]

It was also noted that there is dependence on the race, the impact of environmental conditions and geographical location. Women often suffer Caucasians, African-American population less. Cancer often occurs in regions highly and less in countries with low socio-economic status.

## **Etiology**

Parent number of ovarian cancer originates from the epithelial cells covering the surface of the ovary. It is a mesodermal epithelium, which originally inlays body cavity during embryogenesis.

The term tumor is determined incorrectly burgeoning tissue, which nucleus may be one of "bad" cell body. The resulting cells divide uncontrollably connected to the wrong their differentiation.

Only cells that have a lifelong ability to divide and differentiate tumors may arise.

Ovarian surface cells maintain this ability, which becomes the cause of a huge variety of histological ovarian tumors.

Mutations in genes that play an important role in the cell cycle causes the body loses control over the processes of proliferation. [17]

## **Risk factors for ovarian cancer**

Modern medicine proves that the formation of ovarian tumors affecting hormonal interactions, genetic and environmental factors.

They identified many risk factors. Considered to be the most important:

- age
- sterility
- no pregnancies, and thus the lack of breast-feeding periods
- Multiple stimulation of ovulation in in vitro programs
- hormonal disorders in the form of hyperandrogenism and hiperstrogenism
- nikotynizm
- endometriosis
- state with a history of pelvic radiotherapy
- traveled cancer
- a history of endemic infection (influenza) parotitis (Mumps)
- exposure crystals talc
- diet low in vitamin A and D

- high-fat diet leading to obesity. [7, 18]

The factors include genetic carriers of BRCA1, BRCA2, and genes associated with DNA repair - MSH2 and MLH1.

Environmental factors, which presumably are involved in tumorigenesis is a lifestyle and nutrition.

In countries with better socioeconomic conditions diet contains a lot more animal fats. Registered escalation of morbidity at the time of intensified consumption of red meat, which contains dangerous to the health of polyunsaturated fatty acids. [23,24]

Among postmenopausal women low-fat diet may be a factor reducing the risk.

Research shows that people whose diet is rich in lactose, are also at increased risk. While at the same time they are affected by a lack of the enzyme galactose - 1 - fosfourydylotransferazy.

Amongst the developed countries, only Japan has a low incidence rate, namely three cases per 100 thousand. population. [13,15]

### **Classical prognostic factors of ovarian tumors**

Defined group of factors that estimate is important in predicting the course of the disease. They bind tightly with the fixing of the optimal methods of treatment, classifying the patient to the appropriate group prognosis and to determine survival.

For prognostic factors are counted:

- clinical stage FIGO (staging)
- the degree of histological differentiation (grading)
- histological type
- age and general condition of the patient
- applied to determine the degree of treatment and resulting cytoreduction
- the concentration of tumor markers
- the presence of genetic mutations [23]

### **Clinical stage**

The most important element is the prognostic stage malignant tumors of the ovary FIGO 1988. - Table 1. This classification was based on the results of currently used diagnostic and intraoperative assessment. [11]

Table 1. Clinical division FIGO ovarian cancers [23]

	FIGO classification of ovarian cancer
Stage I	Tumor limited to the ovaries
IA	Tumor limited to one ovary
IB	Tumor limited to two ovaries
IC	IA or IB in excess of the outer shell of the ovary or ascites fluid and the presence of malignant cells
Stage II	The disease limited to the pelvis
IIA	Addressing the reproductive organ
IIB	The involvement of other tissues within the pelvic cavity
IIC	IIA or IIB in excess of the outer shell of the ovary or ascites fluid and the presence of malignant cells
grade III	The disease outside the pelvis or inguinal lymph nodes or retroperitoneal
IIIA	Changes microscopic tumor on the surface of abdominal peritoneal
IIIB	Macroscopic change of diameter <2 cm
IIIC	Macroscopic change in diameter > 2 cm IA or IB in excess of the outer shell ovary or lymph nodes or inguinal inside the peritoneum
Stage IV	Metastatic cancer - location outside the abdominal cavity. If there is infiltration within the pleura, it must also be a positive Pap smear; liver metastases

Based on the FIGO stage five-year survival period of women with ovarian cancer is as follows.

1. degree 72%
2. degree 46.3%
3. degree 17.2%
4. level of 4.8%

### **The degree of histological differentiation (grading)**

Histopathological assessment of the degree of differentiation is another feature of prognostic.

It is the most promising form of cancer with high histological grade defined as the degree of G1.

There are three degrees of histological differentiation.

- GX - the level of diversity possible to determine the
- G1 - tumors with a high degree of differentiation
- G2 - tumors up to 50% undifferentiated cells
- G3 - tumors whose cells are undifferentiated cells exceed 50%.

The longest survival observed in patients with highly diverse types [23].

### **histological Classification**

By far the largest number of malignant ovarian tumors derived from epithelial ovarian outer layer, namely, 55%.

Change the original structure may have benign tumors. Sometimes, however, that with the passage of time shall be subject to the local proliferation of creating the character limit.

Today, the existing divisions of ovarian tumors based on histogenesis have been developed by WHO.

The division shows the following:

#### **I. Cancers of the surface epithelium and stroma**

- benign epithelial tumors
- tumors of borderline malignancy
- cancer

- serous

- mucous

- endometrioid

- transitional cell (Brenner tumors) [17, 18]

## II. Tumors of the strings sex and ovarian stroma (Gonadal)

-user fibrosarcoma

-Sertoli cells and Leydig

-cell lipid

## III. Germ cell tumors (germ) - germinoma

-Rake embryonic

-nabłoniak chorionic

-potworniak (mature, immature solid, cystic, jednolistkowy)

- mixed germ

## IV. Mixed tumors germinalno - Gonadal

-gonadoblastoma

## V. Tumors classified

## VI. For non-specific tumors gonad

## VII. Metastatic tumors, which constitute about 15%

Table 2. The frequency of metastasis from other tumors to the ovary tumors [18]

<b>The original location of the tumor</b>	<b>The frequency of metastases to the ovary</b>
Stomach	50 - 80%
Fallopian tube	50%
Nipple	25 - 30%
Metastasis from the second ovary	25%
Large intestine	15 - 22%

### **Age and general condition of the patient**

A very important prognostic factor is the age of the sick woman. Peak incidence for about and postmenopausal. Gonads no longer perform its physiological function, therefore their operation irregularities are noticeable.

No specific cause of symptoms is late diagnosis of the disease. In women, young recognition occurs most often when the degree of clinical severity and stage is lower than the histopathological differentiation is higher.



Research shows that older patients are even worse bad prognosis for survival. Decreases with age the body's resistance and cardio defense mechanisms. Patients of advanced age often have other accompanying diseases such as hypertension, obesity often, circulatory failure.

In the early stages of ovarian tumors do not produce characteristic symptoms. Non-specific symptoms may indicate disease processes not associated with the gonads. For this reason, patients report only when the severity of the disease is very high. Underway in the pelvic tumor proliferative process becomes a cause of the following symptoms:

abdominal pain and sacral bloating, constipation, indigestion, feeling of fullness

- Disorder in passing urine and stool
- nausea, vomiting, loss of appetite
- swelling of the lower limbs
- loss or weight gain
- Abdominal distension

Patients with very high severity process cancers characterized emaciated silhouettes disproportionately large abdominal circumference and specific, stringent so-called facial features. The sick, the less proposed to "aggressive" treatment. [8.11]

### **Hereditary cancer syndromes**

One of the most important elements of the risk of developing ovarian cancer is a family history of this disease. Modern research has shown that 5 - 15% of ovarian tumors are responsible for gene mutations.

Condition the genes of cancer, ovarian and breast cancer genes BRCA1 and BRCA2. Their mutation is found in 90 - 95% of all hereditary cancer syndromes.

In the general population of women the risk of ovarian cancer is estimated at 1.6%. The presence of the BRCA1 mutation increases the risk to 16 - 46%. In the case of mutations in the BRCA2 gene is increased to 11 - 27%. Women who carry these mutations are getting on average about ten years earlier.

In families where there are many generations of ovarian cancer increases the risk of getting fifty. [20, 21]

Modern medicine describes three sets of hereditary tumor site j aj media.

1. Syndrome hereditary breast cancer and ovarian cancer (HBOC- Hereditary Breast Cancer Ovarian). It comprises about 75-90%, and is associated with the BRCA1 gene mutation.
2. Site-specific assembly hereditary ovarian carcinoma (HOC-Hereditary Ovarian Cancer). It amounts to about 5%, and is associated with a mutation in the gene BRCA 1 and 2.
3. Lynch syndrome (Lynch Syndrome, HNPCC- Nonpolyposis Hereditary Colorectal Cancer). Of about 2%, and is associated with a mutation of MSH2, MLH1. This group

includes cancer and colon adenocarcinoma (endometrium, small intestine, stomach, ovary, urinary tract, bile ducts). [1, 2, 12, 15, 18, 20, 21]

### **Prevention of ovarian tumors**

Preventive actions in the field of ovarian cancer are constantly a huge challenge for organizations engaged in health promotion programs.

Epidemiological studies have shown that the fight against ovarian cancer in Poland and in the world still brings unsatisfactory results. It conducted a series of studies aimed at identifying new methods to detect cancer in early stages.

Unfortunately, there is still a method that would be highly sensitive and specific to meet the criterion of effective screening test according to WHO standards.

The prevention of tumors, there are three stages of prevention: primary prevention, secondary and tertiary.

In primary prevention should educate women about the risk factors for the disease. It is important to encourage a healthy lifestyle manifested attention to physical activity, diet and regular medical examination.

Women who were at special risk groups should be offered and be able to perform regular diagnostic tests.

Secondary prevention is aimed at the early detection of ovarian cancer in the form of screening.

Despite specific efforts of the medical community still fails to extract a single test that ovarian tumors facilitates a high sensitivity and specificity.

Screening of tumors of the ovary include intelligence, gynecological examination, transvaginal ultrasonography and assessment of the concentration of CA 125 antigen.

Activities under prevention of ovarian tumors are still difficult social problem and requires ongoing research efforts to enable early diagnosis. [3, 13, 14]

### **Summary**

Malignant neoplasm of the ovary, not without reason, is called the "silent killer". Clinical symptoms in the early stages of the disease are nonspecific, which significantly delays the diagnosis. About 70% of patients report to the doctor III and stage IV. Accordingly, the prognosis is poor and the very high mortality rate.

Disturbing epidemiological data and diagnostic difficulties make it modern medicine constantly strives to develop effective methods for diagnosis and treatment of ovarian tumors.

Research has shown that carcinogenic processes in ovarian tumors arise from the interaction of hormonal, genetic and environmental factors.

A large group of cases, is associated with genetic predisposition namely mutations in the genes BRCA1 and BRCA2. Accordingly, it is important to isolate the population from the risk groups and take their programs regular diagnostic tests.

There is still no sensitive and specific screening methods that allow early detection of ovarian cancer. Taking control gynecological, through vaginal ultrasound examination and determination of concentration of the antigen CA 125 is the primary form of screening.

Ovarian cancer has long been a topic of special interest to the medical community, raising standards for early detection and treatment of this disease.

For ovarian cancer medical community has long been a topic of special interest to improve the standards of early detection and treatment of this diseases.

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