

CLINICAL CASE

## A RARE CASE OF OVARIAN CANCER IN A 19-YEAR-OLD PATIENT

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### Abstract

*Ovarian cancer is an important health problem because, in generally, is an asymptomatic disease which is diagnosed in advanced stages. Due to these causes it has a high mortality. Managing ovarian cancer in adolescent patients is a real challenge, mainly because the FIGO staging is a surgery one and because it requires an aggressive treatment including radical surgery and chemotherapy. The treatment should be adjusted to each case and it needs a multidisciplinary medical team. We present the case of a 19 years old Caucasian patient who was admitted in the Department of Obstetrics and Gynecology of University Emergency Hospital of Bucharest after she presented to Emergency Room for pelvic-abdominal pain which appeared one month earlier with accentuated progressive character.*

**Keywords:** ovarian cancer, mortality, surgery, treatment

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### Introduction

Ovarian cancer is one of the most lethal gynecological cancers, being in the eight-place as a cause of death from cancer in women worldwide [1-4]. In 2018, this pathology caused more than 184.000 death across the world [2,3]. It is known that ovarian cancer occurs in women between 60 and 70 years old, rarely seen in young women, with an incidence of 1.1% in patients under 25 years old [2,5].

The epidemiological incidence of ovarian cancer varies in different regions of the world. The highest incidence was reported in the North of Europe and United States and the lowest one in Japan, in 2012 [1,6]. Regarding the ethnic groups, the highest prevalence is recording in Caucasian women, Hispanic, African-American and Asian women, while the highest mortality is in African population [1,4].

The difference on the incidence of ovarian cancer may be due to the various risk factors. There are known established associations with ovarian cancer risk like high weight, dietary factories and personal or family history of cancer like breast or endometrium cancer [7]. However, only 5% to 10% of ovarian cancer are of familial origin, most of them being sporadic [1,6]. Parity and the use of oral contraceptive seem to have an inverse relation with the risk of ovarian cancer, while menstrual and hormonal factors like early age at menarche and late menopause present an important association [6]. Also, lifestyle, old age, poverty and poor access to health represent important risk factors [1].

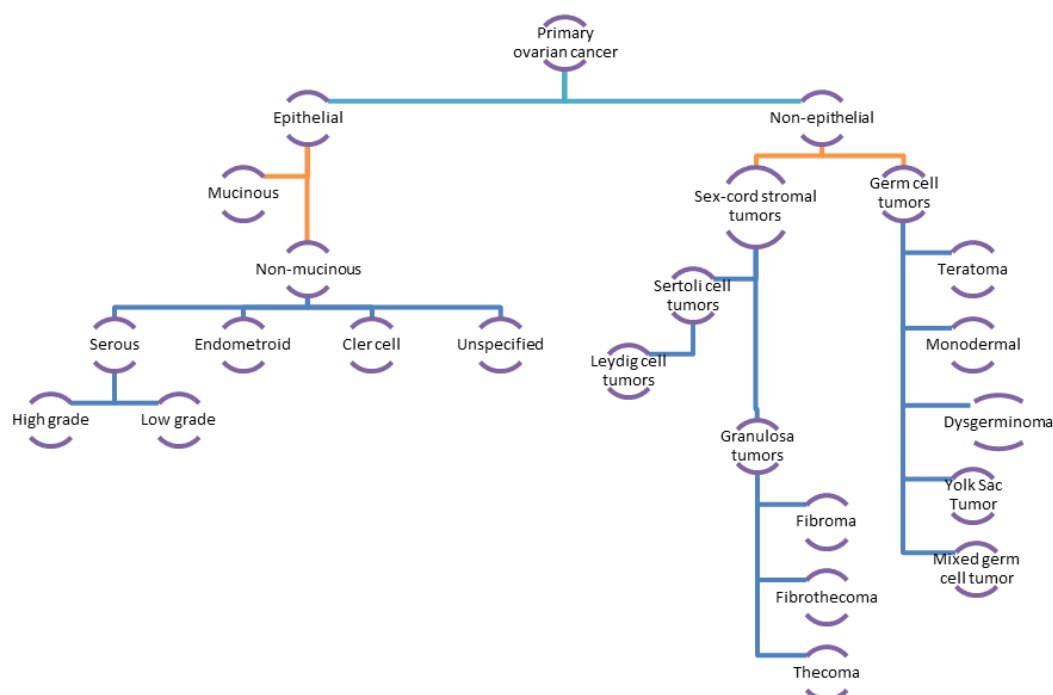
Ovarian cancer is classified in more subtypes (Figure 1).

The importance of the subtypes of this cancer is notable because of the different histological structure, pathogenesis, molecular profile,

clinical prognosis and different therapeutic management [1,6]. The most common type of ovarian cancer is the epithelial one, the non-epithelial type representing only 10% of all cases [1,4].

The staging of ovarian is defined by FIGO and it is a surgical staging (Table 1). The

management of ovarian cancer depends of its stage. The most cases are diagnosed in advanced stages, but several studies show that in women under 35 years old it is discovered in early-stage, this may be the reason why they do not need lymphadenectomy [2,8-10].



**Figure 1 – Classification of ovarian cancer [1]**

A reason that ovarian cancer is diagnosed in an advance stage may due to the fact that there is no screening program in public health to detect it on time [1]. In young women the therapeutic attitude needs a multidisciplinary medical team including gynecologist, oncologist and psychotherapist, because in this stage of age many women may want fertility conservation. They need to understand the benefits and the risk of the treatment, which can be an adnexectomy, radical surgery and chemotherapy with an important impact on the lifestyle of the patient.

## Case presentation

We present the case of a 19-years old Caucasian patient who was admitted in the Department of Obstetrics and Gynecology of University Emergency Hospital of Bucharest after she presented to our Emergency Room for pelvic-abdominal pain which appeared one month earlier with accentuated progressive

character. She also complained of changes in bowel habits.

The patient had an ovarian surgery at 15 years old for a voluminous ovarian cyst - 11 cm diameter and a cholecystectomy one year later. The surgery for ovarian cyst was an emergency one because the patient had acute abdomen and it was performed laparoscopic surgery which reveal adnexal torsion thus the content was aspirated, and it was not performed cystectomy. The histopathological result of the cystic content was negative for malignancy. She was recommended to start oral contraceptive treatment for long term under medical surveillance and the need of a ROMA score. One year later, the patient had for 2 days severe epigastric pain and in right upper quadrant with no improvement under medical treatment. Because of the disabling symptomatology an emergency laparoscopic cholecystectomy was performed, and the histopathological result was chronic acalculous cholecystitis.

Regarding personal medical history, she had no abortions, nor births. Regarding the

gynecological history she had menarche at 13 years old, with regulated menstrual cycles, at 28-30 days, moderated menstrual flux with a duration of 4 days. She began sexual life at 14 years.

Nine months earlier from the presentation in our Emergency Room the patient performed an abdominal ultrasound which detected a left adnexal tumor having approximately 4/3 cm with mixed content with multiple septum and papillary projections.

Regarding the general examination, she was 161 cm high and weighted 57 kilograms, she had an important abdominal distention with the limit of a pelvic tumor to umbilicus. Transvaginal and transabdominal echography established the diagnostic of voluminous adnexal tumor - a transonic mass with a vascular tissue component with multiple septations with dimensions over 250 mm. (Figure 2).



**Figure 2 - Echography aspect of the voluminous adnexal tumor with heterogenic characteristics**

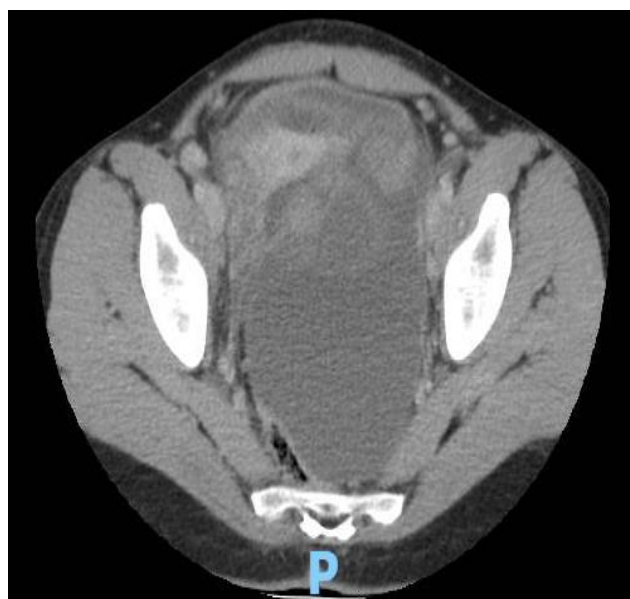
The CT scan described also the multilocality voluminous expansive process having the origin in both adnexa. The tumor measured 157/108 mm transaxially and 210 mm cranio-caudal, with the inferior pole in pouch of Douglas and the superior pole reached the umbilic. The structure of the process was described as heterogenic with thick septum inside it, large tissue surfaces and central iodophilia (Figure 3).

Also, at the CT examination was noted that the adnexal tumor created a mass with the uterus

suggesting that uterus had malignancy invasion. Thus, the mass determinate a compression on intestinal ansae and urinary bladder creating bilateral ureterohydronephrosis stage II.



**Figure 3 - Computer tomography examination detecting the voluminous tumor which created a mass with the uterus**



**Figure 4 - Lymphatic nodes seen by computer tomography examination**

An important mark is that paraaortic lymph nodes had oncological characters in the imagistic exam (Figure 4). No hepatic and pulmonary metastasis were found on CT scan. The blood samples were in normal limits. Because of these aspects the patient had a psychotherapeutic consult in which she was advised about the possibility of the worst scenario and she was explained the risks and benefits of the surgery and its need.

After a clinical and paraclinical balance the surgery was performed with a multidisciplinary team including a gynecologic oncologist physician. Intraoperative no ascites was found, but was revealed a tumoral mass consisted from intestinal anseae adhered to the ovarian tumor which occupies the entire hypogastrium. After a rigorous examination of the whole abdominal cavity, it was performed viscerolysis and were removed two exophytic tumors with cauliflower like surface which were sent to extemporaneous exam (Figure 5).



**Figure 5 - Intraoperative aspect of the ovarian tumors - exophytic and cauliflower like aspect**

The intra-operative examination report result was mucinous borderline ovarian tumor, and it was performed total hysterectomy with bilateral salpingo-oophorectomy and cytoreduction. Surgical team considered extended viscerolysis of cancerous adhesions, but because an important bleeding started the surgical team together with the anesthesiologist decided to stop the surgery because the risks outweighed the benefits and because of the vital risk for the patient. Post-operative the patient needed 2 days of intensive care and 2 units of blood.

After these 2 days, the patient returned in the Department of Gynecology and Obstetrics, where the evolution was favorable under antibiotics and anti-inflammatory drugs. The final histopathological result was bilateral low-grade serous ovarian carcinoma developed on serous borderline tumor with invasion in fallopian tubes, cervix and uterus. According to the histopathological result the staging of the ovarian cancer of this patient was IIB (FIGO classification). The oncological evaluation, based on the final result of the histopathological exam, recommended subsequent reintervention, including lymphadenectomy, omentectomy, peritoneal biopsies and other residual lesions and

maybe appendectomy after health rebalancing and chemotherapy based on platinum after 4-6 weeks from the moment of surgery. The number of chemotherapy cycles would be evaluated according to the immune response and tolerability of the patient

The patient was released after 7 days from surgery with uncomplicated evolution and favorable health status. She was informed about the need of the imagistic reevaluation by CT scan and RMI in case of the second look surgery.

Unfortunately, the post-operative follow-up of the patient was not adequate, and she did not attend the oncological treatment and surveillance. The uncooperative behavior may be due to the low education level or to the COVID-19 pandemic. The patient was lost in follow-up.

## Discussions

This case report presents a rare type of ovarian cancer in a very young patient. Epithelial ovarian cancer is reported as a disease of 6th and 7th decade of life and it is not common in adolescents and due to these, there are little known about these tumor characteristics and its clinical prognosis in this group of age [11]. Because it is a rare pathology in women under 21 years old there are not many studies conducted for these patients.

One study that was conducted on a period of 12 years analyzed young women under 35 years and revealed a number of more than 1.000 patients with ovarian cancer. Their conclusion was that mucinous type was the most common one in this group of patients, while low-grade serous had a rare prevalence. This study also shows that almost 44% of enrolled patients underwent uterine-preserving surgery and this is explained by the stage I of the disease in the moment of the diagnostic [2]. On the other hand, there is a study performed between 2012 and 2019 which enrolled 44 patients aged 15-39 years with epithelial ovarian cancer and its results show that more than half of the patients were diagnosed in an advanced-stage as III and IV [11]. In our case the patient was diagnosed in an advanced stage, despite the fact she was an extreme young patient for this type of pathology.

STAGE		DESCRIPTION
<b>I</b>		<b>Tumor confined to ovaries or fallopian tube(s)</b>
<b>IA</b>		Tumor limited to one ovary (capsule intact) or fallopian tube; no tumor on ovarian or fallopian tube surface; no malignant cells in the ascites or peritoneal washings
<b>IB</b>		Tumor limited to both ovaries (capsules intact) or fallopian tubes; no tumor on ovarian or fallopian tube surface; no malignant cells in the ascites or peritoneal washings
<b>IC</b>		Tumor limited to one or both ovaries or fallopian tubes, with any of the following:
	<b>IC1</b>	- Surgical spill
	<b>IC2</b>	- Capsule ruptured before surgery or tumor on ovarian or fallopian tube surface
	<b>IC3</b>	- Malignant cells in the ascites or peritoneal washings
<b>II</b>		<b>Tumor involves one or both ovaries or fallopian tubes with pelvic extension (below pelvic brim) or primary peritoneal cancer</b>
<b>IIA</b>		Extension and/or implants on uterus and/or fallopian tubes
<b>IIB</b>		Extension to other pelvic intraperitoneal tissues
<b>III</b>		<b>Tumor involves one or both ovaries or fallopian tubes or primary peritoneal cancer, with cytologically or histologically confirmed spread to the peritoneum outside the pelvis and/or metastasis to the retroperitoneal lymph nodes</b>
<b>IIIA</b>		Positive retroperitoneal lymph nodes only (cytologically or histologically proven)
	<b>IIIA1(i)</b>	- Metastasis up to 10 mm in greatest dimension
	<b>IIIA1(ii)</b>	- Metastasis more than 10 mm in greatest dimension
	<b>IIIA2</b>	Microscopic extrapelvic (above the pelvic brim) peritoneal involvement with or without positive retroperitoneal lymph nodes
<b>IIIB</b>		Macroscopic peritoneal metastasis beyond the pelvis up to 2 cm in the greatest dimension, with or without metastasis to the retroperitoneal lymph nodes
<b>IIIC</b>		Macroscopic peritoneal metastasis beyond the pelvis more 2 cm in the greatest dimension, with or without metastasis to the retroperitoneal lymph nodes (include extension of tumor to capsule of liver and spleen without parenchymal involvement of either organ)
<b>IV</b>		<b>Distant metastasis excluding peritoneal metastases</b>
<b>IVA</b>		Pleural effusion with positive cytology
<b>IVB</b>		Parenchymal metastases and metastases to extra-abdominal organs (including inguinal lymph nodes and lymph nodes outside of the abdominal cavity)

**Table 1 - From International Federation of Gynecology and Obstetrics. Staging classification for cancer of the ovary, fallopian tube and peritoneum. *Int J Gynecol Obstet* 2014**

Other study showed also that most of the tumors diagnosed in girls and young women were still localized to the ovary. Although diagnosed cases in advanced stages were higher in children between the ages of birth-14 years nearly 26, while in adolescents with ages 15-19 years were reported nearly 22% of this stage [12].

From the North American Association of Central Cancer Registries', extracted data from more than 1.6 million women for the period 1992-1997, showed that only 1.2% of ovarian cases were reported to occur in children and adolescents between the ages of birth-19 years [12]. From these data germ cell tumors were the most common histologic type found in children between the ages of birth-14 years (78%) and adolescents ages 15-19 years (54%). In the group 20-24 years carcinomas were predominated (70%). The incidence of carcinoma increased across all the age groups and more than doubled between the group 15-19 years - 8 per million [12]. Also, serous carcinomas were diagnosed in

57% patients aged between 15-19 years and in the same group age, mucinous carcinomas accounted for 40% of the carcinomas reported among adolescents and nearly 36% of the carcinomas reported among young adults [12]. According to the risk factors our patient had in her personal medical record an ovarian surgery with laparoscopic aspiration of the ovarian cyst without cystectomy. The histopathological result of the cystic content was normal. Further she developed an ovarian tumor with a quick progress which finally was proven to be a low-grade serous ovarian carcinoma that had developed on a borderline tumor. Because of the lack information regarding the histological type of the previous cyst we can exploit that maybe the first cancerous transformations began in the pediatric life of the patient with the appearance of the voluminous cyst which finally lead to ovarian cancer.

In a review of ovarian neoplasm in girls aged under 20 years epithelial tumors with malignancy



had a rate of 15.9%, which 39.4% were mucinous type and 30.3% were borderline malignant. [13]. The treatment of the ovarian cancer depends of its stage. In young women it is a special concern because of the need of fertility preservation. On one hand there are studies which report a favorable outcome after conservative surgery, on the other hand there are studies showing the need of radical surgery without the possibility of uterine preservation [2,11]. The conservative surgery should be adopted in well-differentiated and encapsulated epithelial lesions without adhesions or ascites [14,15]. The optimal surgical procedure in case of ovarian cancer is defined as the removal of all visible tumor with the intent to leave no macroscopic residual disease. Indubitable, patients with small residual tumor volumes have a better prognostic [16]. About young women who want uterus preservation unilateral salpingo-oophorectomy can be performed in patients diagnosed in IA stage without the need of adjuvant therapy, but it is not recommended for patients with clear cell, carcinosarcoma or grade III tumors and when the neoplasia is present outside the ovaries [16]. The second step to a right management of the disease is the use of chemotherapeutic regimen, containing platinum and taxane. This step plays an integral role in the care of patients with advanced disease [16]. In our case, the result of the extemporaneous examination was different to the final histopathological result. Thus, the surgery was not complete adding the intraoperative complications. Our patient needed radical surgery including lymphadenectomy, omentectomy, peritoneal biopsies, adjuvant chemotherapy and later even a later second look. Though our patient was very young she had been diagnosed in an advanced stage and there could not be done a conservative surgery. Unfortunately, due to all circumstances like low educational level, the COVID-19 pandemic time and the fear to face the disease our patient did not undergo the oncological follow-up.

## Conclusion

Ovarian cancer in adolescents has a rare incidence, but it represents a very important health problem because it has big impact on the fertility life. It is important to be more precocious on ovarian borderline tumors because as we have

seen they can lead to malign tumor and can have a quick development even in very young women. Due to these aspects we consider that adolescents with an adnexal mass must be rigorous evaluated and should be treated by a multidisciplinary team.

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