

Massive peritoneal cavity calcification in the course of advanced ovarian cancer: a case report

Gustaw Wójcik^{1,2}, Jolanta Piskorz³, Włodzimierz Bulikowski²

¹Department of Diagnostic Imaging, Zofia Zamoyski Tarnowska Provincial Hospital in Tarnobrzeg, Tarnobrzeg, Poland

²Department of Rehabilitation, Physiotherapy and Balneotherapy, Medical University of Lublin, Lublin, Poland

³Department of Anesthesiology and Intensive Care, Zofia Zamoyski Tarnowska Provincial Hospital in Tarnobrzeg, Tarnobrzeg, Poland

Abstract

Ovarian cancer usually does not give any clinical signs until it reaches a large size. This condition is often associated with the occurrence of metastases within the peritoneal cavity, pelvic and abdominal cavities. Ovarian cancer can spread by intraperitoneal implantation, by way of the lymphatic system, and also through the systemic circulation. Even when the tumor reaches a large size, the symptoms are not specific and may resemble other ailments. Therefore, ovarian cancer is detected in most cases only in the third and fourth level of advancement.

Peritoneal calcification occurs in many diseases. The degree of calcium deposits is usually small and does not give clinical symptoms.

In the reported case, computed tomography of the abdomen showed numerous scattered peritoneal calcifications of irregular shape as well as massive calcification in the uterus and appendages. In the detection of changes associated with calcification, multidetector computed tomography shows a very high sensitivity. It makes the precise location and assessment of the extent of changes possible.

Key words: abdominal cavity, ovarian cancer, calcification peritoneum, peritoneal malignancy.

Introduction

Ovarian cancer is the most common cause of death among genital cancers in women. Menopausal age is considered to be a factor increasing the risk of ovarian cancer, which may indicate hormonal determinants of cancer.

In Poland as well as in the world, the incidence of ovarian cancer is 0.3% of women under 30 years of age and 0.37% of women over 50 years of age. The peak incidence of the disease is the period between 40 and 70 years of age and is then 57 cases per 100,000 women. Unfortunately, up to 70% of ovarian cancers are diagnosed at the metastatic disease level [1].

Hysterectomy and tubal ligation are treatments that protect against the development of ovarian cancer, which among other things is explained as interruption of the way of potential carcinogens reverse transport [2].

Calcification in most cases is associated with the natural aging process of the organism and deposition of calcium in the walls of arteries, but calcified changes occurring within nodularly changed organs generally demonstrate a malignant tumor. It is similar in the case of ovarian cancer when mass features of calcification

are found in the tumor. Calcification in some cases may appear throughout the abdominal cavity.

One of the complications of ovarian cancer can be calcium deposits in the wall of the peritoneal cavity and the abdominal wall. Typically small calcified changes of the structure of small lumps causing no clinical symptoms are found.

Heterotopic ossification is a separate intra-abdominal mesenteric ossification of pseudotumors which usually occurs in men, almost always after surgery or trauma of the abdomen and is often manifested in the form of bowel obstruction [3].

The aim of the study is to present a case in which the result of the development of ovarian cancer has been a massive build-up of calcium in the peritoneum.

Case report

The patient, aged 54, was referred to the gynecological department with suspected ovarian cancer. Morphological blood tests were performed: WBC 14,230/ml; RBC 4.84 million/ml; HGB 13.3 g/dl; HCT 41.7%; PLT 595,000/ml and biochemical tests: Na 139.1 mmol/l; K 5.37 mmol/l. Chest X-ray was performed, which

Corresponding author:

Gustaw Wójcik, Department of Rehabilitation, Physiotherapy and Balneotherapy, Medical University of Lublin, 6 Chodźki St., 20-093 Lublin, Poland, e-mail: gustaww@tlen.pl

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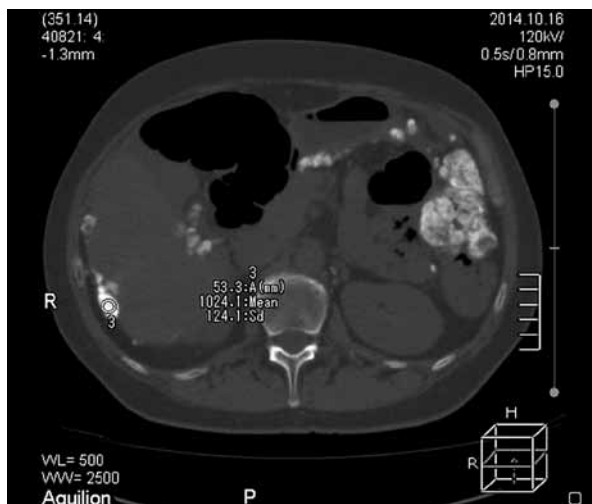


Fig. 1. Computed tomography scan of the abdomen without contrast media supply. Transverse scans of the abdomen with visible massive calcifications

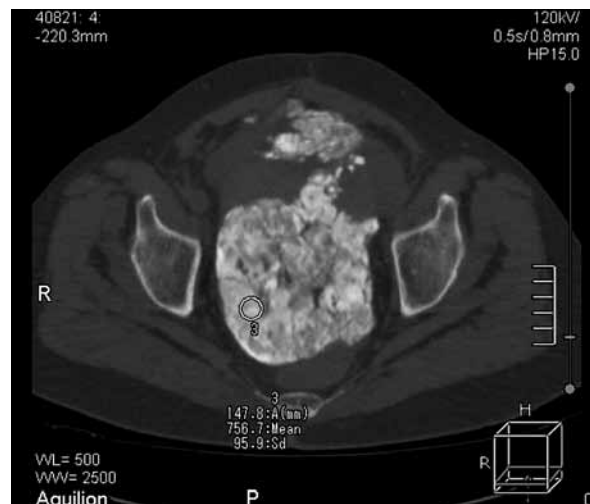


Fig. 2. Reconstruction of volumetric computed tomography of the abdomen with a visible calcium deposit in the abdomen

showed no lung lesions. The silhouette of the heart and aorta did not differ from the norm. However, there was an increased pulmonary vascular figure and both sides of diaphragmatic-rib angles were slightly shallower.

The conducted computed tomography (CT) scan of the abdomen and pelvis revealed several calcifications of the polycyclic outline surrounding the surface of the liver and spleen. The study showed the presence of massive calcification in the omentum (transverse dimension 15 cm × 5 cm) and many smaller ones. The plan of the left ovary revealed a tumor with calcification measuring 68 mm × 82 mm. In the Douglas Pouch there was a similar change of 75 mm × 67 mm shaping the rectum. The changes surrounded the entire uterus. The urinary bladder was empty – not for assessment. The pelvic wall showed no obvious infiltration characteristics. Enlarged lymph nodes were not found while the rest of the abdominal cavity was filled with a large amount of ascites.

The patient was qualified for exploratory laparotomy, during which a large quantity of serous fluid was found in the abdomen. Disseminated malignancy comprising a nodularly changed network, spleen, and numerous tumor implants in the coatings of the abdomen were found. In the Douglas Pouch there was bowel infiltration – the uterus and appendages were separately imperceptible. There were intestinal adhesions with coatings and nodularly changed network. After separation of the intestines, the nodularly changed network was removed. The material was submitted for histopathological examination. Treatment was not expanded by hysterectomy due to the impossibility of separating the uterus and appendages from infiltration. The postoperative course was uneventful.

The surgical specimen was submitted for histopathological examination with a total weight of grams

covering the network of 280 mm × 110 mm, all of which was occupied by a whitish solid infiltration. Pathological diagnosis was adenocarcinoma papillare serosum.

Conclusions

Ovarian cancer does not give any clinical signs until it reaches a large size. This condition is often associated with the occurrence of metastases within the peritoneal cavity, pelvic and abdominal cavities [4]. Ovarian cancer can spread by intraperitoneal implantation, by way of the lymphatic system, and through the circulatory system [5]. Even when the tumor reaches a large size, the symptoms may resemble gastric complaints, which are then accompanied by ascites. Therefore, over 70% of ovarian cancers is detected only in the third and fourth level of advancement.

The appearance of peritoneal pathology in the CT depends on the duration of the lesions and the degree of their advancement. In the early changes in the peritoneum, subtle streaks penetrating into the fatty tissue appear. Lumps forming in the great omentum are evident as the disease progresses. With time, the pellets are formed, which combine to form a compact mass replacing fat [6].

In the reported case, the CT scan of the abdomen showed numerous diffused peritoneal calcifications of irregular shape and a massive calcification in the uterus and appendages.

According to the classification of the Federation Internationale de Gynécologie et d'Obstétrique (FIGO), the presented case corresponds to stage III C of the disease – for the intraperitoneal infiltration is greater than 2 cm but not greater than the peritoneal cavity [7]. In the case of ovarian cancer of stage III and IV, when it is already a metastatic tumor, cytoreduction is in prin-

ciple performed, i.e. the removal of most of the tumor mass. In the cited case, the procedure of cytoreduction was not performed due to impossibility to separate the uterus and appendages from the infiltration, which had also undergone massive calcifications.

In the presented case, we are dealing with serous ovarian cancer (cystadenocarcinoma serosum), which accounts for about 40% of all epithelial tumors.

Calcification within the tumor and the peritoneum is quite common in the advanced stage of epithelial ovarian cancer [8]. However, peritoneal calcification foci are usually of a small volume limited to a few millimeters or centimeters. Peritoneal calcification can be classified in terms of morphology as calcified nodular or amorphous lumps or flat resembling a sheet of paper.

Peritoneal calcifications are usually observed in dialysis patients as a complication of continuous ambulatory peritoneal dialysis (CAPD) [9]. In some asymptomatic patients, microscopic calcifications are observed in the peritoneum. Most calcifications located in the peritoneal cavity usually have a structure of dispersed granules or are in the form of crystalloid deposits and have an oval shape [10].

In the case of abdominal CT studies of patients on peritoneal dialysis, peritoneal calcifications are a common discovery and take the linear nature of the changes in the form of a sheet of paper. However, in the case of ovarian cancer, calcifications are encountered quite rarely, and typically they involve the change itself, which is used to determine the stage of the disease. Ovarian cancer can also cause calcification of distant soft tissues; however, the form of calcium deposits in each case of the disease is different. Linear calcifications may indicate a benign nature of the disease, while strong and massive calcifications of soft tissues, including the lymph nodes, already suggest a more malignant process [11].

Deposits of calcium in the peritoneal cavity in the course of ovarian cancer occur much earlier than in the case of peritoneal dialysis patients and are associated with a more rapid course of the disease.

In the literature, there have been reported rare cases of calcification in the abdominal wall, which were created as a result of a previous abdominal surgery or trauma. Computed tomography in such cases showed similar changes in the shape of a sheet of paper or

a more diffuse calcification around the intestine and mesentery, which, as in the case of ovarian cancer, were accompanied by ascites [12].

Computed tomography is a highly sensitive tool for the diagnosis of calcifications but its main limitation is low sensitivity for detection of small tumor implants, particularly in the small intestine or colon.

Monitoring peritoneal calcification in the abdominal CT is essential for the control of preclinical symptoms that can lead to peritonitis and progression of calcification.

Disclosure

Authors report no conflict of interest.

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