

# Ascites as the first sign of breast cancer – case report

Jarosław Niedziałek<sup>1</sup>, Paweł Kiciński<sup>1</sup>, Sylwia Przybylska-Kuć<sup>2</sup>, Andrzej Prystupa<sup>2</sup>,  
Konrad Krzyżanowski<sup>3</sup>, Grzegorz Dzida<sup>2</sup>, Jerzy Mosiewicz<sup>2</sup>, Andrzej Jaroszyński<sup>1</sup>

<sup>1</sup> Department of Family Medicine, Medical University, Lublin, Poland

<sup>2</sup> Department of Internal Diseases, Medical University, Lublin, Poland

<sup>3</sup> II Department of Radiology, Medical University, Lublin, Poland

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## Abstract

Ascites (peritoneal cavity fluid) is a pathological sign occurring as a result of accumulation of exudate or transudate fluid in the peritoneal cavity. The most frequent causes of the development of ascites are: cirrhosis (approx. 80%), cancer (10%), other liver diseases which take the course with portal hypertension, chronic heart failure, nephrotic syndrome, pancreatitis and tuberculosis. Breast cancer is the most frequent carcinoma in females worldwide, and the most frequent cause of death, but ascites is its rare clinical manifestation. Metastases of breast cancer into the alimentary tract and/or peritoneum, however, are infrequent. In the presented study, we discussed difficulties related to the differential diagnostics of ascites which turned out to be the first, non-specific clinical manifestation of advanced breast cancer.

## Key words

breast cancer, peritoneal metastasis, ascites, peritoneal carcinomatosis

## INTRODUCTION

Ascites (peritoneal cavity fluid) is a pathological sign occurring as a result of accumulation of exudate or transudate fluid in the peritoneal cavity. The most frequent causes of the development of ascites are: cirrhosis (approx. 80%) and other liver diseases which take the course with portal hypertension (e.g. portal vein thrombosis), cancer (10%), chronic heart failure, nephrotic syndrome, pancreatitis and tuberculosis. Ascites occurs in approximately 15-50% of patients with cancerous diseases. Ascites frequently occurs in the course of the following types of cancer: ovarian, endometrial, colon, gastric, and pancreatic cancer. More rare causes of ascites include: breast cancer, non-Hodgkin's lymphoma, prostatic cancer, mesothelioma, multiple myeloma and melanoma [1].

Breast cancer is the most frequent carcinoma in females worldwide (23% of all cases of malignant cancer), and the most frequent cause of death (14%). It is estimated, that breast cancer is diagnosed in 1.5 million women annually, and about 400 000 die due to this disease. The highest morbidity is observed in industrialized countries (USA, Belgium, France and Denmark), whereas the lowest – in the countries of Africa and South-Eastern Asia [2]. In recent years in Poland, according to the National Cancer Register, breast cancer has been diagnosed in approximately 13,000-15,000 women annually [2, 3]. It is estimated that in Poland there are approximately 55,000 women living with the diagnosis of breast cancer. The frequency of occurrence of this type of cancer increases with age. Breast cancer rarely occurs among women aged under 45, and the majority of cases concern patients aged over 50 (approximately 80% of all cases in Poland) [3].

In the presented study, we discussed difficulties related to the differential diagnostics of ascites which turned out to be the first, non-specific clinical manifestation of advanced breast cancer.

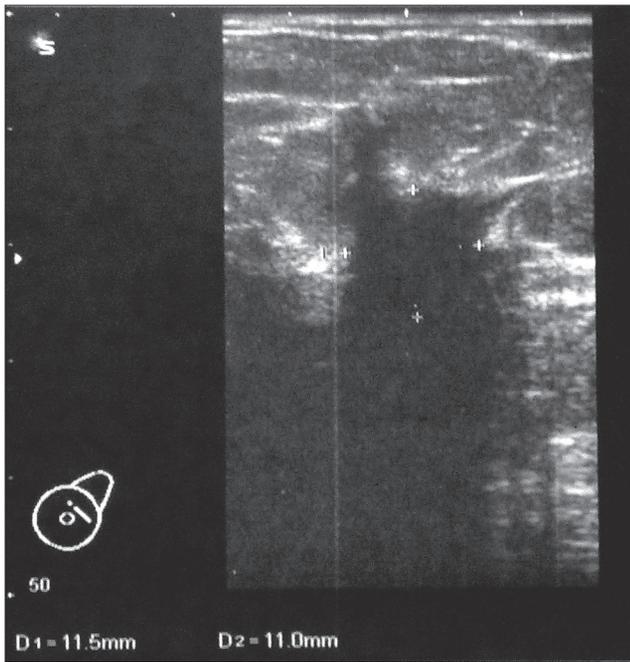
## CASE REPORT

A female patient aged 61, was admitted to the Internal Medicine Ward for the diagnostics for ascites, and based on medical history taking it was established that until then the patient had been treated for arterial hypertension, and within the last several months had complained of back pain and deterioration of tolerance of effort. From the beginning of hospitalization in the ward the patient's condition was severe. In the clinical image, dyspnea dominated (initially on effort, subsequently at rest), and strong pain concerning the abdomen and lumbar and sacral regions. Physical examination confirmed ascites, the presence of fluid in the left pleural cavity, as well as the presence of a relatively small tumour with a diameter of approximately 2 cm in the upper outer quadrant of the left breast, and a pocket of lymph nodes about 2 cm in diameter in the left armpit. In laboratory tests, borderline anaemia was observed (11.8 g/dl), hypoalbuminemia 2.4 g/dl, significantly elevated levels of the tumour markers – CA 15-3 – 1,496 U/ml (normal <30) and CA 125 – 423 U/ml (normal <35).

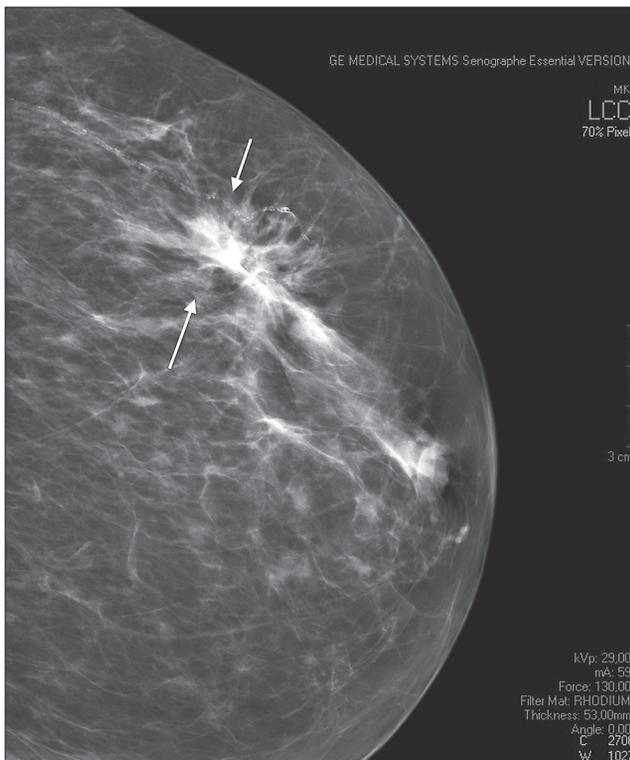
Chest radiography revealed the presence of fluid in the left pleural cavity, reaching the level of the 4<sup>th</sup> rib, and a trace of fluid in the right pleural cavity. The sonographic image of the left breast showed an irregular hypoechoic area, with the presence of calcification shadow located in the upper outer quadrant, which might suggest a malignant lesion (Fig. 1). Mammography was performed for a more precise evaluation of the tumour, which showed at the above-mentioned site a spicular tumour 39 × 19 mm in size (Fig. 2).

Address for correspondence: Paweł Kiciński Department of Family Medicine, Medical University, Staszica 11, 20-081 Lublin, Poland.  
E-mail: pawel.kicinski@umlub.pl

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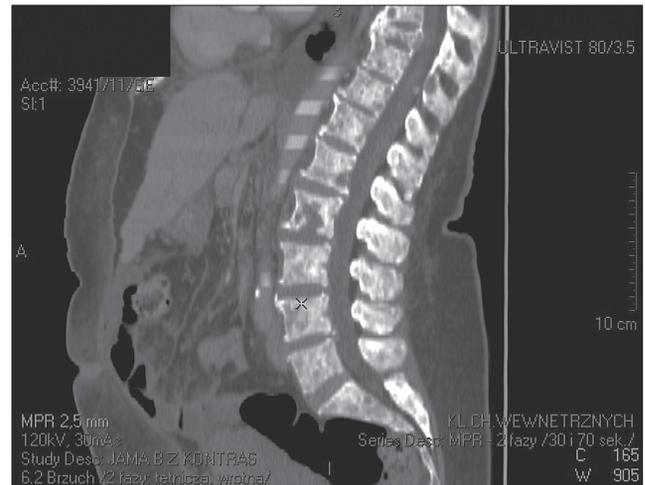
**Figure 1.** Sonographic image of hypoechoic tumour of the left breast – invasive lobular cancer



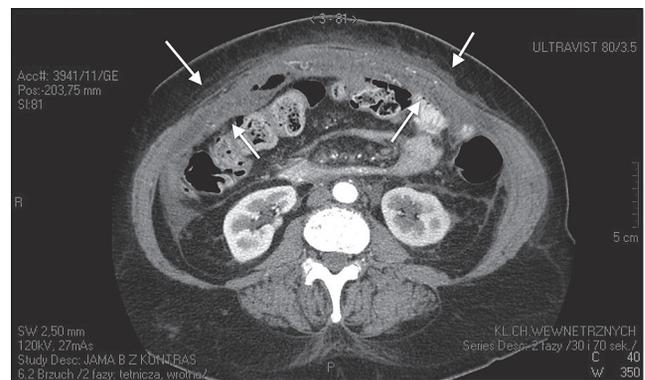
**Figure 2.** Spicular tumour found by mammography.

USG of the abdominal cavity was also performed in which, apart from the presence of fluid in the peritoneal cavity and enlargement of the spleen (longitudinal diameter of 13.8 cm, normal size <11 cm), no other abnormalities were found.

Gastroscopy showed stiffening of the abdominal wall, suggesting malignant infiltration. Computed tomography scan with contrast of the abdominal cavity and the lesser pelvis demonstrated thickening of the abdominal wall in the region of the body of the stomach of up to 15 mm,



**Figure 3.** Osteolytic metastatic changes of the spine – computed tomography scan



**Figure 4.** Neoplastic infiltration of the peritoneum (white arrows) – peritoneal carcinomatosis – CT scan

and peritoneal infiltration (Fig. 4). The presence of fluid in both pleural cavities and in the peritoneal cavity was also observed. No pathologies were noted in the ovarian region. In all bones examined, numerous fine osteoblastic changes were present, and larger-size osteolytic changes (the largest change had a diameter of 35 × 16 mm) which might be equivalent to metastatic changes (Fig. 3).

Due to increasing dyspnea and ascites, puncture of the left pleural cavity and peritoneal cavity was performed several times, and a total volume of about 20 litres of yellowish fluid was evacuated. Cytologic examinations of fluids from the body cavities did not show any presence of cancerous cells. Finally, the diagnosis was made after the performance of a thick-needle biopsy of the left breast tumour, which confirmed an invasive lobular breast cancer (*carcinoma lobulare invasivum mammae sinistrae*).

Due to the severe condition of the patient, the use of radio- or chemotherapy was not possible. The general state of the patient gradually deteriorated, and she died about 3 weeks after the ultimate diagnosis had been made.

In the autopsy examination, the advancement of the cancerous process was assessed as the stage T2N2M1. Multiple metastases were found to the heart muscle, pericardium, lungs, pleura, liver, spleen, pancreas, adrenal glands, kidneys, greater omentum, gastric wall, ovaries, peritoneum and bone marrow.

Cancer cell emboli were also present located in the suprarenal arteries and spleen artery, with the features of subsequent spleen infarction.

## DISCUSSION

Advanced (metastatic) breast cancer includes a cancer that, at first diagnosis, has spread to distant organs from the original site of the tumour (approximately 5-10% of all patients). Most frequently, metastatic breast cancer spreads locally to the lymph nodes, and distant metastases concern the liver, lungs, bones, and more rarely the CNS. Usually in such cases, no cure is possible, treatment is palliative, and the median survival time is approximately 18-24 months [2, 3].

Ascites is a non-specific clinical manifestation of breast cancer. Also, metastases of breast cancer into the alimentary tract and/or peritoneum are not frequent. However, it should be emphasized that data from available literature concerning the spread of breast cancer metastases to the peritoneum and alimentary tract are unequivocal. In autopsy examinations, such metastases were observed in 8-32% patients, while in the retrospective study by McLemore et al. their occurrence was rare [4]. Nevertheless, metastases to the peritoneum or the alimentary tract were found in no more than 1% of patients with metastatic breast cancer, as a late symptom of cancerous disease. The most frequent sites of metastases in the alimentary tract were the colon and rectum (45%), followed by the stomach (28%), small intestine (19%), and oesophagus (8%). Lobular carcinoma was the type of cancer which most often metastasized to the above-mentioned organs (64%), as in the case presented [4].

Tuthill et al. [5] confirmed that in patients with metastases to the peritoneum the prognosis is very unfavourable. Retrospective studies conducted by these researchers showed that the median survival of patients with metastases to the peritoneum was only 6 weeks. It is noteworthy that the median survival of patients with metastases to the sites other than the peritoneum was 20 months. In the presented study, it was also observed that among patients with metastases to the peritoneum, ductal carcinoma constituted 77% of cases [5].

The second mechanism, apart from metastases to the peritoneum, which may lead to the development of ascites in patients with breast cancer, is portal hypertension due to cancerous infiltration of the hepatic parenchyma, without concomitant metastases to the peritoneum [6]. In addition, ascites may also be enhanced by right ventricular heart failure in patients with metastases into the heart muscle, or damage to the heart muscle after chemotherapy [7].

The presence of ascites in combination with an elevated level of CA-125 brings to mind the suspicion of ovarian cancer. Therefore in the first place, the presence of ovarian cancer was excluded on the basis of imaging findings. However, it should be emphasized that the cancer antigen CA-125, used in the diagnostics of ovarian cancer, should not be applied in the differential diagnostics in patients with ascites. This marker produced, among others, in the mesothelial cells is highly non-specific and occurs in elevated concentrations

in patients with ascites, or in patients of both genders with fluid in the pleural space [8]. In addition, the level of CA-125 increases in breast cancer, endometrial and lung cancer, as well as in many non-cancerous diseases (endometriosis, inflammatory states of the lesser pelvis) [8].

Differential diagnostics of ascites is a great challenge. Imaging examinations may be helpful (ultrasonography, computed tomography). Biochemical and cytologic tests of the evacuated ascitic fluid are not always definitive. In the presented case, no cancer cells were found in microscopic examinations, despite many times repeated punctures of the pleural and peritoneal cavities.

## SUMMARY

1. In differential diagnostics of ascites, cancer should be considered concerning the abdominal cavity organs, as well as metastases from the primary site to outside the abdominal cavity, including breast cancer.
2. The value of determinations of cancer antigen CA-125 in the differential diagnostics of ascites is low, which may result in delayed diagnosis and lead to the performance of unnecessary surgical procedures.
3. The presence of breast cancer metastases to the peritoneum is relatively rare, and is the manifestation of a considerable advancement of cancerous disease, which is associated with a very unfavourable prognosis.

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