

Gastropleural Fistula Caused by Peritoneal Carcinomatosis in Metastatic Ovarian Cancer: A Case Report and Review of Literature

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ABSTRACT

Gastropleural fistula frequently occurs as a complication of peptic ulcer, surgery, or as a consequence of trauma or malignant disease. Here, we report the case of a 59-year old woman with a history of metastatic ovarian cancer, who was hospitalized with a suspected diagnosis of pneumonia. During hospitalization, a left pneumothorax was found requiring a thoracic drain. After drainage, chest X-ray showed a massive

pleural effusion and thoracic Computed Tomography (CT) scan demonstrated a gastropleural fistula. Because of the patient's clinical condition, surgery was not possible and the patient was treated with supportive care. This case report illustrates a rare complication of an oncological disease which could be treated, in optimal clinical conditions, with a surgical approach.

Keywords: Gastropleural Fistula; Ovarian Cancer; Metastases

INTRODUCTION

Gastropleural fistula is a rare complication which can occur after thoracic and abdominal surgery, infection (i.e. abscess or empyema), and in malignant disease. We present a rare case of gastropleural fistula secondary to a peritoneal carcinomatosis in ovarian cancer.

CASE REPORT

In April 2015, a 59-year old woman was referred to the Oncological Department after onset of dyspnea, tachycardia, polypnea and cachexia. In 2004, she had a diagnosis of well-differentiated serum-papillary ovarian adenocarcinoma stage IIIc based on the International Federation of Gynecology and Obstetrics (FIGO) classification. The patient was not eligible for surgery and was prescribed chemotherapy with carboplatin and paclitaxel (a total of six cycles). During follow-up, a complete radiological and serological response was observed. In 2008, a blood test reported an increased level of serum CA125 and computed tomography (CT) imaging demonstrated progression of the disease represented by ascites and peritoneal carcinomatosis. From November 2008 to March 2015 the patient received multiple rounds of chemotherapy due to disease progression. In

February 2015, liposomal doxorubicin was administered as salvage therapy.

At the time of clinical evaluation, a left lung mobility reduction with decrease ipsilateral vesicular murmur and basal right crackles were detected. Moreover, blood test demonstrated a leucocytosis neutrophil with $(20.8 \times 10^9/l$ leucocytes with $18.2 \times 10^9/l$ of neutrophils) and increased C-reactive protein level (199 mg/L).

A chest X-ray showed massive left pneumothorax with mediastinal traction (Figure 1A) and a pleural drain was placed. Emission of abundant blackish liquid was observed. Chest X-ray revealed persistent massive pleural effusion (Figure 1B) without any improvement in clinical symptoms. A thoracic CT scan showed a large fistula between posterior-lateral gastric wall and left pleura (Figure 2). The patient's clinical condition did not allow surgical intervention and antibiotic therapy was prescribed (ceftriaxone and metronidazole). During hospitalization the patient was afebrile, with negative blood cultures, but clinical deterioration was observed with bronchial congestion, dyspnea and respiratory distress. The patient died seventeen days after the diagnosis of gastric wall and left pleura fistula.

SYSTEMATIC REVIEW

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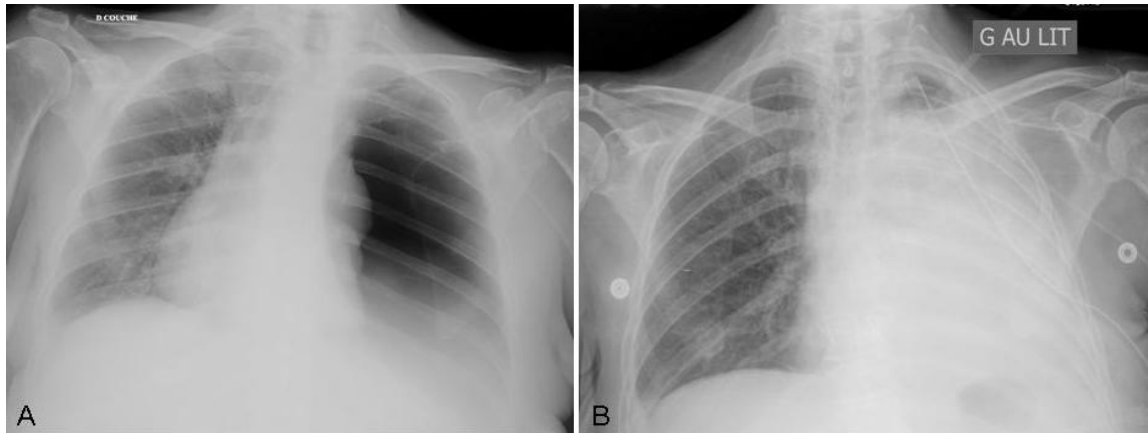
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Figure 1: Images of the chest X-ray before (A) and after (B) the drain positioning



A PubMed search from January 1960 to November 2015 was performed to include all relevant studies or publications using the combination of the following terms: gastric fistula, diaphragmatic hernia, stomach, pleural diseases, pleural effusion, pneumothorax, respiratory tract fistula. We identified 42 cases of gastropleural fistulas which fulfilled our inclusion criteria and were considered in our systematic review [1–19]. We decided to classify gastropleural fistulas according to the pathological causes (Table I). In 13 cases (28.9%) the pathological cause was a peptic ulcer or gastric infarction, in 12 (26.7%) a complication of surgery, radiotherapy or chemotherapy, an injury in 8 (17.8%), an empyema or infection in 5 (11.1%), a malignant lymphoma in 5 (11.1%) and a solid cancer in 2 (4.4%). In three of these cases, the authors identified two causal factors. According to the Markowitz classification [1] established in 1960, these cases of gastropleural fistula could be linked to hiatal hernia (4 cases), to post traumatic causes with or without hernia (3 cases each), peptic ulcer (7 cases) and abdominal stomach (ulcer). Twenty-three reported cases did not fulfil the classification criteria.

Adachi et al. published a review of the literature from 1960 to 2000 in which the principal cause of gastropleural fistula was peptic ulcer or gastric infarction (11 cases, 39.3%) and only 2 cases (7.1%) were iatrogenic [2]. Thus, our analysis reveals a significant difference in the origins of gastropleural fistula. Indeed, in the last decade, the majority of gastropleural fistulas are related to iatrogenic events or complications of surgery, chemotherapy and radiotherapy (10 cases, 58.8%), while only 2 cases were caused by peptic ulcer disease or gastric infarction [3,4,6,10,12–14,19].

DISCUSSION

Gastropleural fistula is a rare complication of certain surgical procedures (such as lobectomy or splenectomy), nasogastric tube placement, traumatic diaphragm rupture, peptic ulcer disease, or infection (abscess or empyema) [1, 2, 6, 10, 13, 16]. In the oncological setting, it is a rare primary presentation of the disease; however some cases have been reported in Ewing sarcoma, gastric cancer or lymphoma [10, 12, 14]. In our review, we identified some cases of gastropleural fistula as a complication of radiotherapy or chemotherapy, especially with the use of antiangiogenic treatments as bevacizumab, tyrosine kinase inhibitors as sunitinib [10, 12, 13].

In the present case, the mechanism of the fistula formation is unclear. It is possible that localised tumour growth during metastatic evolution of peritoneal carcinomatosis, eroded the diaphragm thus promoting gastropleural fistula. Unfortunately, we did not have a surgical confirmation of our hypothesis. We could exclude an iatrogenic event because the patient was off therapy and had not received an anti-angiogenic treatment.

The clinical presentation of gastropleural fistula is variable and may include signs related to pleural effusion, respiratory distress symptoms, fever and cough, and either hydropneumothorax or pneumothorax, as in our case [2,4,6–19]. The diagnosis is usually obtained with a contrast CT scan and confirmed by endoscopy or surgery. The presence of food or gastric secretion in the pleural fluid, after thoracostomy tube placement, should raise a suspicion of gastropleural fistula [9, 14]. If feasible, surgery is recommended with a multidisciplinary surgical approach such as partial gastric resection, diaphragmatic repair and

Table I: Pathological causes of Gastropleural fistula [1-19]

Cause*	1960- 2000	2001-2015	Total
Peptic ulcer or gastric infarction	11 (39.3%)	2 (11.8%)	13 (28.9%)
Malignant lymphoma	3 (10.7%)	2 (11.8%)	5 (11.1%)
Solid tumour	1 (3.6%)	1 (5.9%)	2 (4.4%)
Empyema or infection	4 (14.3%)	1 (5.9%)	5 (11.1%)
Injury	7 (25%)	1 (5.9%)	8 (17.8%)
Iatrogenic (surgery, chemotherapy, radiotherapy)	2 (7.1%)	10 (58.8%)	12 (26.7%)

* In three cases the authors declared two cause factors

washout of the chest [16]. Endoscopic approaches have also been successfully used [5, 15]. A conservative approach often leads to the patient death after a few days of evolution [10]. The palliative situation of our patient led us to decide a conservative approach because surgery was not considered feasible with a high risk of surgical complications.

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Figure 2: Image of the CT scan with the evidence (black arrow) of the gastro-pleural fistula



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