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Case Report

Colopleurocutaneous fistula associated with empyema as a late complication of colorectal cancer

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Abstract

Introduction: Pleurocutaneous fistula is a pathological communication of subcutaneous tissue with the pleural cavity, and can occur as a result of infectious, malignant processes and iatrogenic procedures. Colopleural fistula is rare and is mainly caused by processes in the abdomen. The appearance of empyema is usually described as a complication of colopleural fistulas that are the result of pathological processes in the abdomen.

Case Presentation: We report an extremely rare case of colopleurocutaneous fistula with pleural empyema present, 8 years after left hemicolectomy due to colon adenocarcinoma. Radiological diagnostic procedures performed confirmed the existence of colopleurocutaneous fistula. The patient was given antibiogram therapy and regular thoracocentesis for empyema, as well as a fistulous canal toilet.

Conclusions: After achieving sterility of the fistulous canal and regression of empyema, the fistulous canal was closed with fibrin glue, and during the next 6 months follow-up, there was no reopening of the fistula, nor did the patient have any other complications.

Key words: Colopleurocutaneous fistula; empyema; colorectal cancer.

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Introduction

Fistula represents abnormal passage or communication between two normally unconnected structures, body cavities, or the surface of the body [1]. Empyema as a complication of pleuropneumonia can lead to pleurocutaneous fistula [2]. Fistula between the abdomen and pleura are rare and are associated with high mortality when not recognized in time [3,4].

We report an extremely rare case of colopleurocutaneous fistula, with pleural empyema present, 8 years after left hemicolectomy due to colon adenocarcinoma, with a presentation of the importance of radiological methods, pulmonological treatment, and surgical procedures in the diagnosis and their treatment.

Case report

A 72-year-old patient was admitted for further diagnosis and evaluation of the possibility of treating a suspected left pleurocutaneous fistula. During the last year, the patient was hospitalized several times in the regional hospital due to pleuropneumonia, during which he was treated with antibiotic therapy and punctured several times because of empyema of the pleura, along with fistule wound toilets. Upon admission to our hospital, laboratory values showed normal leukocyte counts, twice elevated neutrophil counts, elevated C-reactive protein (CRP) values 15 times above reference values. Streptococcus pyogenes, *Escherichia coli,* and *Enterococcus faecium* were isolated in a fistulous canal swab, and in pleural fluid culture. Eight years earlier, the patient underwent a left hemicolectomy for adenocarcinoma of the colon.

Prior to the suggested surgery, the following radiological methods were performed to examine the fistulous canal: ultrasonography, Computed tomography (CT), and CT fistulography. Ultrasonography of the soft tissues of the chest wall indicates a fistulous canal with a longitudinal diameter of about 65 mm. The fistula extends deep through the subcutaneous adipose tissue into the paracostal musculature. In the paracostal region of the eleventh and twelfth ribs, it communicates with the 45 × 43 mm

Figure 1. Fluoroscopy of applied contrast in fistulous canal.

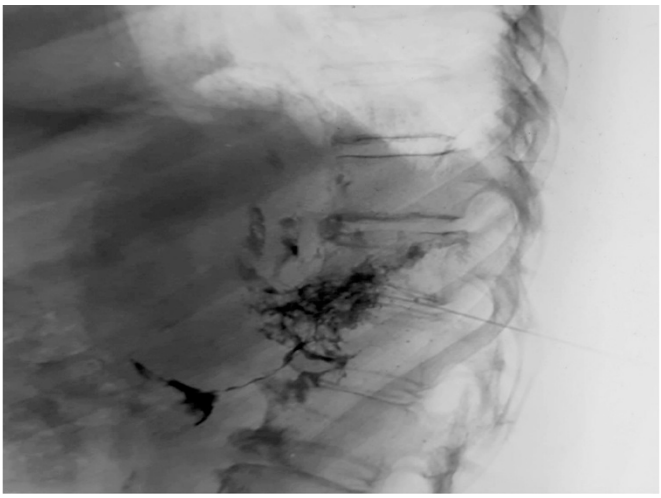
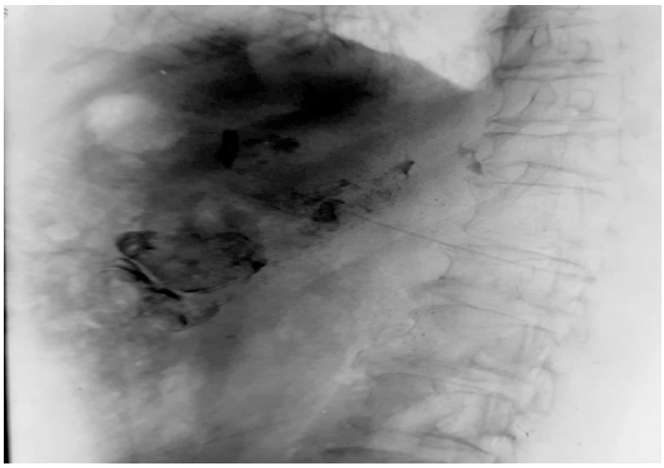


Figure 2. Fluoroscopy of applied contrast in fistulous canal.



diameter collection. In classical fluoroscopy, we placed a plastic gutter with a diameter of 19 G in the fistulous duct and applied an iodine contrast medium to fill the cavum of the collection in the pleural space (Figure 1). From the above collection, another fistulous canal showed up to the left paracolic space, and the wall of the colon is opacified (Figure 2). Based on the subsequent CT scan, the described collection goes further by channel through the diaphragm and descends along the spleen, of which there are unclear demarcations on individual CT scans (Figure 3,4,5). The contrast medium further enters the colon lumen through the duct (Figure 6). After two hours, a control native abdominal radiography was performed in a standing posture where a contrast agent was seen in the lumen of the colon (Figure 7). No other pathological findings in the abdomen other than those mentioned above have been verified.

Given that the patient was treated for hypertension and diabetes mellitus, as well as mild Chronic obstructive pulmonary disease, therefore surgical treatment was high risk. The patient was given therapy by antibiogram and regular thoracocenthesis for empyema, as well as fistulous canal toilet. Due to the localized character of pleural empyema, we opted for thoracocenthesis instead of thoracic drainage for empyema treatment. After four weeks, the swab of the fistulous duct was sterile. The CT scan of the thorax showed a complete regression of pleural empyema and CRP values decreased. A fibrin glue was inducted with

Figure 3. Contrast medium in colon.

Figure 4. Pleural empyema in posterobasal frenico-costal space.

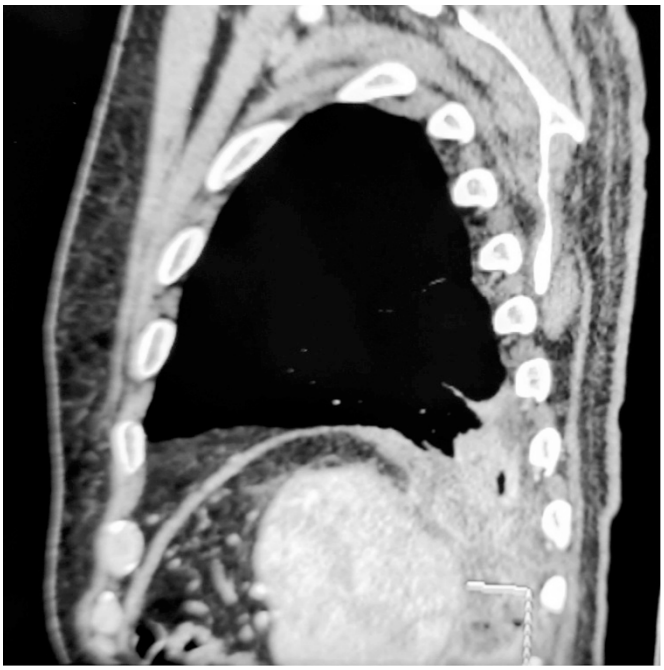


Figure 5. Contrast medium from pleural space goes to colon trough fistulous canal.

a plastic catheter into the fistulous duct and closed. During the next 6 months follow-up, there was no reopening of the fistula, nor did the patient have any other complications.

Discussion

Pleurocutaneous fistula is defined as a pathologic communication between the pleural space and the subcutaneous tissues. It can occur as a complication of an infectious process, neoplasm, foreign body aspiration, or iatrogenic procedures. Diagnosis is usually made on imaging studies, such as CT [5]. Colopleural fistula occurs rarely, usually caused by Crohn's disease, malignant tumor of gastrointestinal tract, or other clinical conditions in abdominal cavity. As a consequence of the thoracic process, several cases after lung resections have been described [6,7]. The occurrence of empyema has been mainly described as a complication of colopleural fistulas resulting from pathological processes in the abdominal cavity. The presence of pathogenic intestinal flora in the pleural puncture can direct the diagnosis to the existence of pathological thoracoabdominal communication [8,9].

Figure 6. Fistulous canal near spleen.

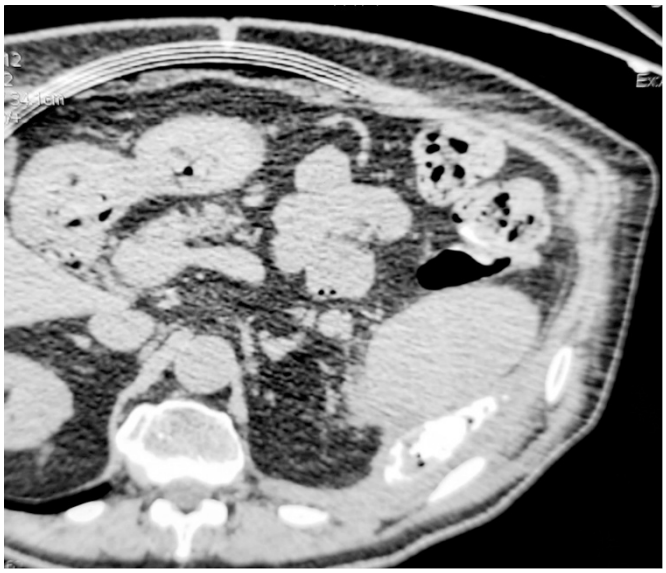


Figure 7. Native radiography of abdomen shows contrast in colon, retroperitoneal and pleural space.

According to Lian *et al.* only 6 cases of pleural empyema associated with colorectal cancer were reported, with a verified colopleural fistula in some of the cases [8]. In 5 described cases, the appearance of empyema was before, simultaneously or immediately after the verification of colorectal cancer [8,10-13], while only in the case described by Osada *et al.* [14] the occurrence of empyema was during immunotherapy for recurrent colon cancer two years after the initial left hemicolectomy for colon adenocarcinoma. None of the reported cases described the existence of a colopleurocutaneous fistula, so we believe that this is one of the first reported cases of a colopleurocutaneous fistula associated with colorectal cancer.

We think that the possible mechanism of the formation of the fistulous channel of the pleura with the skin is related to the localized character of pleural empyema, so given the lack of specific symptoms, the infection was chronic in nature due to protective

inflammatory mechanisms in response to the infection, slowly creating a fistulous duct to the skin.

There is no universally accepted management for colopleural fistulas. Conservative treatment with total parenteral nutrition can be considered in selected uncomplicated cases, or where surgery is contraindicated with associated comorbidity [3,15]. Successful conservative management might be compromised, due to the pressure gradient between the abdominal and pleural end of such fistulas, since the intrapleural pressure is negative or when the fistulous tract is covered with mucosa [9].

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Conflict of interests

No conflict of interests is declared.

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