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Case Report

Gallbladder perforation with cholecystopleural fistula: a case report

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ABSTRACT

The cholelithiasis is a common pathology, however, if left untreated may cause a gallbladder perforation (GBP). This complication can include local or generalized biliary spillage, or a fistulous communication to an adjacent organ. We report a case of a patient with cholecystopleural fistula in a 71-year-old male. Complicated cholelithiasis presented fistulous GBP into the right pleura cavity, progressing into an empyema. The diagnosis was made preoperatively with computed tomography, and the patient was treated with a laparoscopic cholecystectomy, thoracostomy tube, and a biliopleural fistulectomy. The postsurgical outcome was satisfactory, with uneventful follow-up 3 weeks after.

Keywords: Gallbladder perforation, Cholecystopleural fistula, Radiology, Empyema, Case report

INTRODUCTION

The most common cause for gallbladder obstruction is gallstones, which may develop into acute cholecystitis. Chronic untreated inflammation will progress to venous congestion, vascular compromise, and necrosis.[1] The gallbladder may become emphysematous, infected, gangrenous, and cause gallbladder perforation (GBP). The content spillage may be channeled as fistula, localized by surrounding tissue, or generalized into the peritoneal cavity.[2]

In 1934 Neimeier classified GBP into these 3 types: type 1, chronic perforation with a fistulous communication between the gall bladder and an adjacent viscus; type 2, subacute perforation surrounded by an abscess walled off by adhesions from the general peritoneal cavity; and type 3, generalized biliary peritonitis due to free spillage into the peritoneal cavity without protective adhesions. Management is determined by the type of GBP and the patient's condition. Type 1 can be generally managed with scheduled surgery, while type 2 and 3 are more likely to need urgent surgical treatment.[3] However, even with early surgical treatment, type 1 GBP cases have been complicated with patient death due to sepsis and multiple organ failure in the postoperative period.[4] This has created controversy regarding the ideal approach and time-period for fistulous (type 1) GBP.

The diagnosis of type 1 GBP can also prove to be a challenge, as many are diagnosed intra-operatively, rather than pre-operatively, and in some cases, after major complications.[5] Lee at al reported a fistulous formation attributed to percutaneous transhepatic gallbladder drainage, which also questions the safety of the procedure.[6] In their case, the biliopleural fistula was managed conservatively with percutaneous pleural drainage, obtaining spontaneous fistula closure.

We discuss the management of an elderly patient with type 1 GBP with a fistulous communication into the pleural cavity diagnosed preoperative with enhanced CT scan and treated with early laparoscopic surgery.

CASE REPORT

A 72-year-old male patient with a medical history of Diabetes Mellitus type II, dyslipidemia, coronary artery disease, and hypothyroidism, is received at the emergency department due to generalized abdominal pain.

The pain was referred as colic-like, of seven days of evolution, associated with nausea, vomiting, and loss of appetite. Upon physical examination, there were signs of dehydration, peritoneal irritation, and vital signs with hypotension and tachycardia. Laboratory results are reported with hemoglobin of 12.20 g/dL, hematocrit 38.1%, white blood cell count 6.9K/uL, neutrophils 69.4%, total bilirubin 0.7 mg/dL, direct bilirubin 0.2 mg/dL, blood urea nitrogen 15 mg/dL, glucose 145 mg/dL, creatinine 1.0 mg/dL, and uric acid 4.0 mg/dL.

The chest x-ray reported right pleural effusion. Abdominal x-rays were non-conclusive. Abdominal ultrasound was requested revealing a contracted gallbladder with stones and sludge, as well as a right pleural effusion. The patient was admitted and managed for acute cholecystitis and pleural effusion, the latter was managed with a thoracocentesis, performed in the emergency room the same day of admission. The drainage was sent to pathology. During in-hospital stay, the patient presented shortness of breath and subsequent elevation of white blood cells from 11.7 to 25 K/uL in 5 days. Pathology reports the fluid drained had a pH 8.5, white blood cell count of 470 cu/mm3 with 67% polymorphonuclear. Gram stain showed moderate polymorphonuclear cells and the fluid culture revealed the presence of Escherichia coli and Enterococcus gallinarum. A thoracic CT scan was requested, evidencing a multi-loculated empyema with internal pockets of gas; the gallbladder was observed with two stones, irregular areas of wall thickening (4 mm), and perforation of the fundus with disruption of the right hemidiaphragm creating communication with the pleural cavity. The findings were compatible with a cholecystopleural fistula secondary to GBP. (Figure 1a, b)

Thoracostomy tube was placed 5 days after admission to do a pleural fluid culture. 4 days after another thoracostomy tube was placed and drained 400 ml the first day and the rest less than 50 ml per day. The patient was scheduled for laparoscopic cholecystectomy on his 16th in-hospital day. Transoperative findings included a gallbladder adhered to the right hemidiaphragm with a fistulous tract. Laparoscopic cholecystectomy was performed safely with safety triangle visualization. The right hemidiaphragm was repaired with an absorbable suture. The patient had a satisfactory clinical evolution with an uneventful recovery and was discharged on the 10th postoperative day. Follow-up a week later was uneventful.

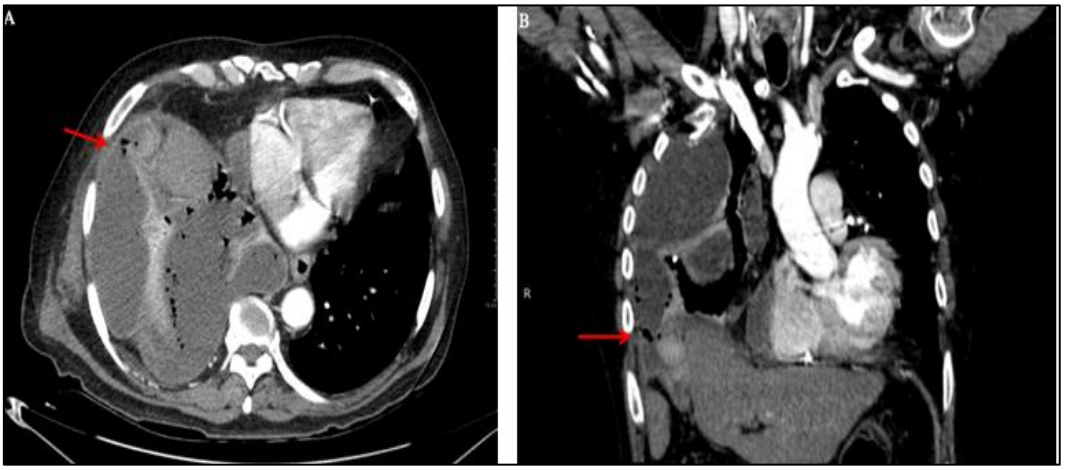

Figure 1: Contrast-enhanced thoracic CT. (A) Axial view and (B) Oblique coronal reconstruction, that shows the perforation of the fundus of the gallbladder with disruption of the right hemidiaphragm causing a direct communication to the empyema. (arrowheads).

DISCUSSION

A cholecystopleural fistula is a rare and atypical presentation of GBP.[7,8] Although GBP fistulas are proposed to be managed with scheduled surgical intervention, a prompt diagnosis and early treatment were crucial for the patient's outcome. An enhanced thoracic CT scan had a higher value than the US for establishing the diagnosis, and adequate planning of the surgery. It's high-resolution and capability for reconstruction made it an accurate diagnostic tool capable of visualizing the gall bladder wall dehiscence and the fistulous tract to the pleural space.

Isolated case reports of cholecystopleural fistula have been previously reported.[5,7,8] Similarly to this case, these cases were elderly patients who presented spontaneous dyspnea, pleural effusion, and identified E. Coli in their thoracentesis. None of the patients presented fever before admission or reported gallbladder disease symptoms.[5,7,8] A possible etiopathogenetic origin of pleural pathologies must include an abdominal origin. A high specificity imaging study should be requested.

Under experienced hands, an ultrasound can help identify indirect signs of chronicity or complications of a gallbladder. Stones are the most frequent cause, while a contracted sac indicates chronicity. However, a fistulous communication may be difficult to identify. CT has better sensitivity (92% versus 79% by US) and allows evaluation of surrounding structures with higher definition.1 This imaging study should be considered by physicians in suspected complicated cases.

An anomalous position of the gallbladder is a rare congenital finding.[9] The patient had an intrahepatic location, in a subcapsular position along the antero-inferior border of the right lobe. The importance of this was the gallbladder was completely embedded in the liver parenchyma, which can attribute to the incomplete emptying and stasis of bile, creating stones. The most cephalic portion formed a fistula through the liver and hemidiaphragm, into the pleural cavity.[10]

Regardless of treatment, antibiotics and anti-inflammatory therapy are essential. Cholecystectomy is the gold-standard for definite treatment of gallbladder pathology. When a collection is present, percutaneous drainage may aid in improving the patient's condition. However, due to the affection of the pleural cavity, and pulmonary compromise, thoracostomy was the primary palliative treatment, before the laparoscopic cholecystectomy.

CONCLUSION

GBP Neimeir type 1 treatment options are defined by the patient's condition and affected organ/cavity to which the fistulous trajectory connects. A review of cases and cohorts with this pathology is needed, to establish recommendations to include in gallbladder pathology guidelines and recommendations.

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