



A RARE CASE OF SPONTANEOUS SUBDIAPHRAGMATIC ABSCESS

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ABSTRACT We report a case of a 34-year-old male who presented with a productive cough, fever, weakness, reduced appetite, and sleep for 15 days. On examination, a soft palpable lump was identified in the epigastric region, and a large thick-walled lesion was noted in the left para-cardiac region extending caudal to the heart. The patient was diagnosed with subdiaphragmatic abscess, which was suspected to be arising due to chronic liver disease and a history of recurrent ascites and multiple tapping. The causative organism was identified as *E. coli*, and the patient underwent on ct scan a diagnostic laparoscopy followed by exploration with subdiaphragmatic abscess drainage. The pus samples were sent for histopathological evaluation, which confirmed the presence of occasional pus cells and gram-negative bacilli. The patient was discharged and advised to follow up with regular check-ups.

KEYWORDS :**Introduction:**

Subdiaphragmatic abscess is a rare condition that occurs when pus collects within the diaphragm. Liver abscesses can invade the thoracic cavity, especially those caused by amebiasis, in 13%–35% of cases. Amongst them, lung abscess due to penetration is more common than pyothorax due to perforation. (4) It is usually caused by the spread of an infection from another part of the body, such as the lungs or abdomen. In some cases, it may be a complication of surgery or trauma to the diaphragm. Pyogenic liver abscess occasionally contains gas originating from the fermentation of gas-producing bacteria, such as *Klebsiella* or *Escherichia coli*, which can form gases using glucose in the anaerobic environment associated with tissue ischemia and hyperglycaemia. (9)

The mediastinum is a rare site for infection, but sometimes extension of infection from nearby structures, rupture of the tracheobronchial tree, or oesophageal perforation can cause intradiaphragmatic abscess. (1) Chronic liver disease and recurrent ascites can also increase the risk of developing subdiaphragmatic abscess. Here, we present a case of sub-diaphragmatic abscess secondary to chronic liver disease and recurrent ascites. This previously unreported complication occurred as a result of transmurular spread of bacteria with seeding of the diaphragmatic muscle.

Cardiac involvement such condition is very rare. It was reported that cardiac involvement may result from the direct extension of primary lesions located at the liver dome entering the thorax via transdiaphragmatic lymphatic and vascular pathways that then rupture into the pleural cavity or mediastinum [4]. Once cardiac involvement occurs, the patient suffers from risks of arrhythmia, myocardial infarction, and cardiac tamponade, which are difficult to manage. (7)

Case Presentation:

A 34-year-old male presented with a productive cough, fever, weakness, reduced appetite, and sleep for 15 days. He also complained of breathlessness, abdominal distension, and pedal oedema for a maximum of four days. On examination, a soft palpable lump was identified in the epigastric region of the upper central region of the abdomen, located between the costal margins and the subcostal plane collection around the pericardium and left hemidiaphragm. The patient had a history of chronic liver disease and recurrent ascites, which had been managed by multiple tapping. The downward trajectory of the patient's clinical course may have been determined by the prior steroid and NSAID use, which contributed to her renal failure and led to fluid overload, respiratory failure (5)

Investigations:

The patient underwent a computerised tomography (CT) scan of the abdomen and pelvis, which suggested a large right-sided inguinoscrotal hernia reaching up to the base of the scrotum. A large thick-walled lesion was also noted in the left para-cardiac region extending caudal to the heart, which was most likely suggestive of infective aetiology, likely abscess. A diagnostic laparoscopy followed by exploratory laparoscopy with subdiaphragmatic abscess drainage was performed. The pus samples were sent for histopathological evaluation, which confirmed the presence of occasional pus cells and gram-negative bacilli. The causative organism was identified as *E. coli*, which was sensitive to amikacin, gentamycin, amoxiclav, carbapenems, and colistin. It was resistant to ceftazidime, ceftriaxone, ciprofloxacin, and cotrimoxazole.

Management and Outcome:

The patient underwent a diagnostic laparoscopy followed by exploratory laparoscopy with subdiaphragmatic abscess drainage. He was prescribed antibiotics according to the sensitivity report. The haematology report was found to be near normal during discharge, and an ultrasound of the abdomen showed the coarse echotexture of the liver with mild surface nodularity. The patient was advised to follow up with regular check-ups.

Discussion and conclusion

Subdiaphragmatic abscess is a rare condition that can be challenging to diagnose, often mistaken for subphrenic abscess or loculated empyema (3). To our knowledge, this is the first time that this specific constellation of complications has been reported in such patient. Our patient presented with a abscess, predisposing factors for this infection are diabetes mellitus and empiric therapy was promptly started, bacteraemia probably resulted in liver abscess. (2)

Pleuropulmonary complications may in the presence of a liver abscess and are seen in from 20% to 35% of all cases of liver abscess. Cough and pleuric chest pain are quite common clinical manifestations of pleuropulmonary amebiasis. Hemoptysis or the expectoration of sputum, resembling anchovy paste or chocolate sauce, may also occur in patients with invasive pulmonary abscess. The most common radiographic abnormality is a small to moderate amount of right pleural effusion caused by the presence of an infiltrated liver below the right hemidiaphragm. (8)

The vascular and lymphatic networks that incorporate the falciform ligament connect it to the liver, diaphragm, retroperitoneum, mediastinum, abdominal wall, and chest wall. Its arterial blood flow is supplied by the left inferior phrenic artery, the middle hepatic artery,

and, to a lesser extent, the left and right hepatic arteries . These have anastomoses with terminal branches of the internal thoracic artery The veins of the falciform ligament are known as the vein of Sappey and vein of Burow. These drain into the left inferior phrenic vein and liver parenchyma (or peripheral portal veins), and communicate with the intrathoracic vein and epigastric vein . The superficial lymphatics of the liver drain lymph along the falciform ligament and both down toward the abdominal wall and up to the parasternal lymph nodes Because of the presence of these vascular networks, it is believed to be caused by the transmission of bacteria to surrounding structures. (6).Pleural effusion from a pyogenic liver abscess in an immunocompetent host is a rare condition. However, if not diagnosed and managed early, it can be potentially fatal. Transdiaphragmatic extension of pyogenic liver abscess can lead to rare cases of pleural empyema and pericarditis which have close to a 100 percent mortality rate if not caught and treated on time (Cho et al 2018). (10)

The principles of treatment include incision and drainage with appropriate antibiotic coverage.

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