International Surgery Journal
Gayathre SP et al. Int Surg J. 2023 Apr;10(4):736-739
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20230986

Case Report

A case report on recurrent subphrenic abscess with pulmonary tuberculosis

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Received: 11 January 2023
Revised: 19 February 2023
Accepted: 20 February 2023

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ABSTRACT

Subphrenic abscess though a common presentation itself encountered in surgical practice due to various cause, a tubercular subphrenic abscess in the absence of coexisting tuberculous abdomen presenting as a complication of pulmonary tuberculosis is extremely rare. Only a very few cases have been reported as an extrapulmonary manifestation of tuberculosis so far. We report a case of isolated sub-diaphragmatic abscess which responded well with anti-tuberculous therapy despite all other interventions.

Keywords: Recurrent subphrenic abscess, Pulmonary tuberculosis, Pigtail drainage, Surgical intervention, Anti tuberculous therapy

INTRODUCTION

Most subphrenic abscesses are caused by introduction of bacteria into subphrenic space. A primary subphrenic abscess is defined as an abscess that developed without introduction of bacteria from outside and is thought to be very rare. Among secondary subphrenic abscesses, gastric and biliary tree surgery constitutes more than 50% of abscesses. Appendicitis contributes to 8%, while colonic surgery and trauma comprise 19% and 8%, respectively.[7] One should be aware that subphrenic abscess can also present due to pulmonary cause. Peritonitis and intraabdominal abscesses should be remembered to have a rare association with lobar pneumonia or pulmonary tuberculosis. Very few cases one with immunoglobulin deficiency and subphrenic cold abscess has been reported so far.[1,2]

CASE REPORT

A 60 years old female presented to our ER with complaints of abdomen pain for 1 week, vomiting, purulent discharging sinus in the right hypochondrium, h/o cough and fever on and off with evening rise of temperature. Patient had similar complaints 1 month back diagnosed to have subdiaphragmatic abscess without previous abdominal surgery/trauma for which pigtail drainage was done. She was a known diabetic. On admission, vitals were stable. Complete hemogram showed leucocytosis and raised erythrocyte sedimentation rate (ESR). Per abdomen showed tenderness in the right hypochondrium. Clinical suspicion of recurrent subphrenic abscess was made and proceeded with radiological imaging.

Computed tomography (CT) abdomen done revealed a well-defined collection of size 7×7×8 cm with internal air pockets presents in the subdiaphragmatic space with peripheral enhancement; on contrast administration, adjacent liver parenchyma showed increased contrast enhancement and inflammation. We proceeded with ultrasound guided pigtail drainage of subdiaphragmatic collection which had an output of 25 ml per day and she was discharged. Patient presented to us again after 4 weeks with similar complaints. Ultrasonography (USG) showed had 7×7×6 cm right subdiaphragmatic collection.

In view of sepsis, after stabilising, patient was shifted to OR and emergency laparotomy was done. Approximately 100 ml of pus drained from subdiaphragmatic space and there were no features suggestive of intra-abdominal tuberculosis. Postoperatively intrabdominal DT had an output of approximately 25 ml per day and was removed after confirming no residual collection. Pus was negative for acid fast bacilli (AFB) and cartridge based nucleic acid amplification test (CBNAAT). Patient was treated with higher antibiotics. Patient was discharged and again presented with similar complaints with purulent discharging sinus, mild breathlessness and pleurisy after 3 weeks.

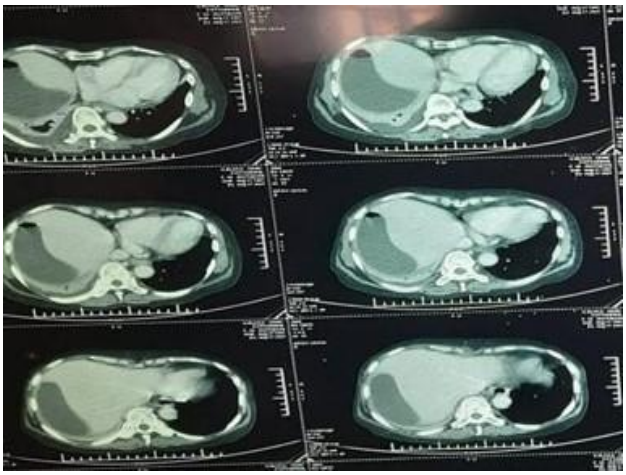

Figure 1: CT abdomen showing subdiaphragmatic abscess.

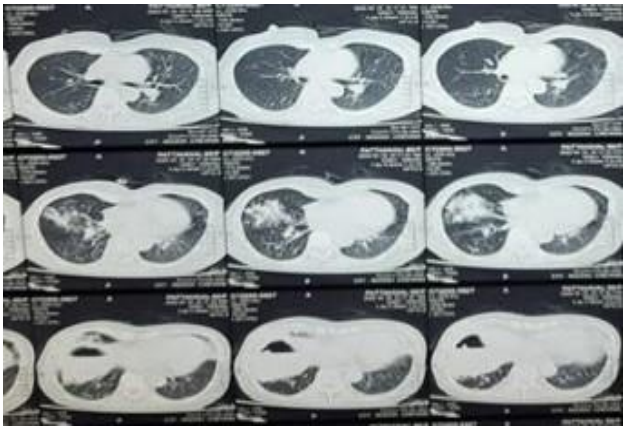

Figure 2: CT chest with lesions s/o active tuberculous etiology.

USG and CT abdomen showed subdiaphragmatic collection of size 6×6×7 cm. CT chest done revealed bilateral basal and apical lobes infiltrates and lesions suggestive of active tuberculous aetiology with minimal pleural effusion. Cytology from pigtail site showed an inflammatory smear p/o granulomatous inflammation.[18] A positive culture for TB from intraperitoneal fluid is low and takes 6 to 8 weeks, which can cause significant delay in initiation of treatment, with expert opinion, patient was started on anti-tuberculous therapy. In 2 weeks, patient's abdomen pain, breathlessness, fever and pus discharge from sinus settled. Patient general condition improved and was discharged.

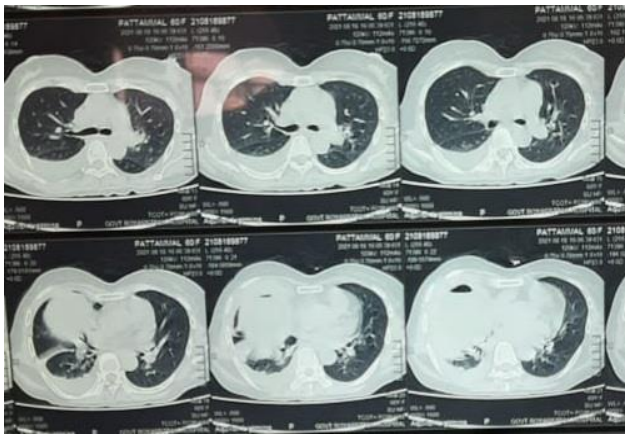

Figure 3: CT image showing active TB infection with right pleural effusion.

DISCUSSION

The diaphragm, an intrathoracic organ, separates the thoracic and abdominal cavities and is covered by pleura and peritoneum, as it is both extrapleural and extraperitoneal. The subphrenic space is divided by the falciform ligament.

The subphrenic space is divided into five regions: the intraperitoneal space above the liver, limited medially by the falciform ligament, is a common location for pyogenic and amebic abscess; appendicitis or pelvic infections can localize here, ascending through the paracolic gutter.

The intraperitoneal space below the liver (Rutherford Morison's kidney pouch) communicates with the right gutter and is home to infections from the stomach and duodenal perforations and empyema of the gallbladder.

Above the liver, the intraperitoneal perisplenic space may become infected from stomach perforation, cancer, splenectomy, or colon resection.

The lesser peritoneal sac behind the pancreas and the left kidney is limited below by the transverse colon. Infection in this area is usually caused by perforation on the posterior wall of the stomach.

Above the liver space, the "bare area" is bounded above and behind by the diaphragm. It is affected by extraperitoneal infections like retrocecal or retroperitoneal appendicitis, kidney abscesses, or from the retroperitoneal portion of the duodenum.

Subphrenic abscess may be caused by: perforation of hollow viscus (appendix, colon); inflammatory process (pancreatitis, cholecystitis, and hepatic abscess); trauma of

internal organs (stab and gunshots); a complication of surgical operations (splenectomy, cholecystectomy and gastrectomy), most commonly in 1-3 weeks after surgery; and idiopathic.

A subphrenic abscess may be right-sided (between right hemidiaphragm and liver) or left-sided (between left hemidiaphragm and spleen), right-sided subphrenic abscesses are more common. In general, there is an infra diaphragmatic localized collection of fluid with gas bubbles or gas-fluid level which has an enhancing wall. It is often combined with elevation of the hemidiaphragm and a pleural effusion.

Subphrenic abscess is a complication which has been associated with a 'high mortality and morbidity' because of the difficulties encountered in the diagnosis and management. In the past this form of suppuration has been associated with primary intra-abdominal infections such as acute appendicitis and perforated peptic ulcer. The abscesses were often diagnosed late and treatment was inadequate. Recent advances in surgical knowledge and newer techniques of diagnosis, improved pre- and postoperative care and liberal use of antibiotics have changed the patterns of subphrenic suppuration. Studies states that the bacterial flora in a subphrenic abscess can be aerobic and anaerobic organisms. The aerobes have been *Escherichia coli* (96%), *Klebsiella* (21%), and *Proteus* (38%); anaerobes include *Bacteroides* (83%), *Cocci* (50%), and *Clostridia* (50%).[6] The mean interval from the preceding operation until drainage of the subphrenic abscess was 5.5 weeks. Overall mortality was 31%.

In our case scenario pus culture was negative for the common organism discussed and patient didn't respond with higher antibiotics. AFB and CBNAAT was negative. With references cited from various studies, since a positive culture for TB in extrapulmonary TB is very low, which can cause significant delay in initiation of treatment, our patient was started ATT with cytology of granulomatous inflammation which helped in decreasing the morbidity and mortality.[17,18]

Review of various literatures revealed, a case report on 21 years old male with immunocompromised state and IgA deficiency with recurrent subdiaphragmatic collection as an unusual extrapulmonary manifestation of tuberculosis was reported for the first time in 2006.[1] Patient was hospitalised frequently for subphrenic abscess. CT abdomen showed loculated collection in anterior and superior sides of liver and subphrenic region. CT guided percutaneous drainage was attempted. CT chest done had lesions consistent with active tuberculosis. On recurrent admissions, patient had metacarpophalyngeal osteomyelitis and brain abscess which responded well with Anti-tuberculous therapy similar to our case report where we had 60 years, female, known diabetic in immunocompromised state presented with recurrent subphrenic abscess responded well with anti-tuberculous therapy despite all other surgical interventions. Another case report had a 14 years old boy with complaints of abdomen pain and fever 1 week was treated with iv antibiotics.[3,7] Physical examination showed right lobar pneumonia and peritonitis. Chest X-ray had right lower lung field consolidation. Ultrasonography abdomen done showed subphrenic collection. Exploratory laparotomy was done, abscess drained and treated with antibiotics.

In our case it was recurrent subphrenic abscess with pulmonary tuberculosis which didn't respond to higher antibiotics, pigtail drainage and surgical intervention. AFB and CBNAAT from pus culture were negative for Tuberculosis, since the sensitivity and specificity of CBNAAT in an extrapulmonary manifested tuberculosis sample is 86% and 91% respectively and CT chest revealed lesions consistent with tuberculosis.[9] Diagnosis of pulmonary tuberculosis was made. With expert opinion patient was started on anti-tuberculous therapy. In 2 weeks, patient's fever, cough, abdomen pain and purulent discharging sinus settled and general condition improved. Patient has completed her anti-tuberculous therapy and is stable at present.

Subphrenic abscess most commonly present as a complication following intraabdominal surgeries, trauma, appendicitis and rarely associated with pneumococcal lobar pneumonia. Pulmonary cause with right subdiaphragmatic abscess is a rare presentation of which tuberculous etiology being the rarest. The inference from the above discussion and our case report is that One should be aware of atypical subdiaphragmatic abscess due to pulmonary cause other than the common abdominal causes following surgery and trauma.

CONCLUSION

Patients presenting with subdiaphragmatic abscess, surgeon should think about its rare presentation associated with pulmonary etiology. Isolated tubercular subdiaphragmatic abscess although very rare, should always be considered as differential diagnosis of atypical abscess. Thorough history and clinical examination and radiological suspicion of subphrenic abscess associated with pulmonary tuberculosis, an atypical presentation should always be considered which can aid in early diagnosis and management. This case is presented because of its atypical presentation.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Gayathre SP, Kumar RN, Silambuselvi K. A case report on recurrent subphrenic abscess with pulmonary tuberculosis. Int Surg J 2023;10:736-9.