

Spontaneous rupture of liver abscess mimicking perforation of bowel (pneumoperitoneum): A case report

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Abstract:

Pneumoperitoneum represents the perforation of bowel loops in most cases. Pneumoperitoneum resulting from a spontaneous rupture of pyogenic liver abscess is rare. Herein, we reported a case of spontaneous rupture of pyogenic liver abscess in a 42-year-old female with diabetes, systemic hypertension and ischemic heart disease. On X-ray abdomen standing and ultrasonography of abdomen, we diagnosed a ruptured liver abscess with free fluid in abdomen and pelvis mimicking pneumoperitoneum without any hollow viscous perforation. From this case, we concluded that though pneumoperitoneum resulting from a ruptured liver abscess is rare, we must keep it in mind especially when all hollow viscous inside the abdomen are normal.

Keywords: Pneumoperitoneum, Pyogenic liver abscess, Diabetes.

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Introduction:

Pneumoperitoneum referred to the presence of free air within the peritoneal cavity but outside the viscera, representing the perforation of bowel loops in 85% to 90% of cases (1-2). It can also be due to other nonsurgical causes and very rarely and unusually by rupture of an abscess in any intra-abdominal solid organ like spleen, liver (3). Herein, we report a rare case of pneumoperitoneum resulting from a ruptured liver abscess.

Case History:

A 42-year-old female presented to the emergency department with progressive distention of abdomen and fever since 15 days. Patient had complaints of breathlessness and edema over bilateral lower limb since 7 days. She had history of diabetes mellitus for 4 years and was on irregular treatment. She was a known case of systemic hypertension and ischemic heart disease. Hence, was admitted to Medicine department. Next day, patient developed severe pain in abdomen and surgical reference was taken. On examination, she was febrile with temperature of 101^oF, blood pressure was 90/60 mm of Hg, pulse rate was 96 per minute, respiratory rate was 20 per minute. Patient presented with pallor and icterus was positive.

Abdominal examination revealed distended abdomen with generalized tenderness and guarding present with rigidity. Liver was enlarged and bowel sounds were absent. Blood examination revealed Hemoglobin 7.8 g%, Blood count 13000/mm³ with neutrophils 90% and Blood glucose 240 mg%. Serum Bilirubin was 1.9 mg/dl, SGOT- 22.7 IU/l, SGPT- 57.6 and Alkaline Phosphatase- 158 IU/l. X-ray abdomen standing showed free gas under diaphragm and ultrasonography revealed gross free fluid in abdomen and pelvis and internal echoes in peritoneal cavity with hypoechoic lesion in left lobe of liver measuring approximately 10.2cm x 10.4cm x 8.6cm with approximate volume of around 500cc. A contrast-enhanced computed

tomography (CECT) abdomen was done which was suggestive of ruptured liver abscess. Therefore, an urgent exploratory laparotomy was done with written informed consent taken. For laparotomy, an upper midline incision was taken. Evidence of, a ruptured right lobe liver abscess with 1500ml of free fluid with pus and pus flakes was noted with an abscess in left lobe of liver of around 500ml noted.

About 1500 ml of turbid pus was noted in the peritoneal cavity with adhesion of omentum with liver. On separation of omentum from liver, we found a ruptured liver abscess with abscess cavity of size 10 cm x 10 cm x 8 cm and purulent material covering it. We drained abscess cavity and pus in peritoneal cavity. All the hollow viscera and biliary system were found normal. Two abdominal drain kit (ADK) drains were kept in situ with one in sub-hepatic gutter and other in pelvic cavity. Thorough wash with warm normal saline was given and laparotomy wound was closed. E coli were isolated from pus of liver abscess sensitive to Piperacillin, Tazobactam, and Imipenem. Patient later developed bradycardia and hypotension for which he was shifted to surgical intensive care unit (SICU) with ventilatory support given and positive inotropic agents started. The patient recovered completely and drains (sub-hepatic and pelvic) were removed on postoperative day 11th and 22nd respectively.

The patient was discharged on the 24th postoperative day after the removal of sutures.

Discussion:

Pneumoperitoneum usually results from the perforation of intraperitoneal hollow organs, which had been thought surgical emergency in 85% to 90% of cases (1-2). Therefore, about 10% of pneumoperitoneum are caused by nonsurgical reasons, in which surgical intervention is usually not required. The reported causes of nonsurgical pneumoperitoneum include thoracic causes (chronic obstructive pulmonary disease, pneumothorax), abdominal causes (connective tissue disease, subclinical or sealed

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perforated viscus), gynecological causes (pelvic inflammatory disease, recent vaginal examination, gynecological manipulations) and iatrogenic causes (previous open abdominal surgery with retained postoperative air, peritoneal dialysis, endoscopic gastrointestinal procedure)(4). However it may also result from rupture of abscess in any intra-abdominal solid organ like spleen, liver(3). In our case Pneumoperitoneum was resulted from rupture of pyogenic abscess in right lobe of liver which is very rare and unusual. Incidence of pyogenic liver abscess is 22-24 per 1, 00,000 hospital admissions(5). Common causes are diseases of biliary system, portal venous source arising from intestinal pathology, embolization of bacteria via hepatic surgery, trauma(6). However in 15% to 45% of cases it is cryptogenic where no cause is identifiable and most of them are single and insidious in onset(7-8) which is alike to our case. For a liver abscess common predisposing factors are diabetes, older age(6, 9) which is similar to our study. Of the patients with ruptured abscess Diabetes Mellitus is found in around 60.9% population. Common causative agents are E-coli and Klebsiellapneumoniae (10) which is same as our study. These organisms produce gas which is responsible for the Pneumoperitoneum in our case. Chou FF (11) reported that gas forming pyogenic liver abscess accounted for 10% to 20% of pyogenic liver abscess. Morioka et al(12) reviewed the literature and reported 27 cases of gas containing pyogenic liver abscess in Japan and 21 out of 27 cases had diabetes mellitus. Chung-Hunk-Nee et al(3) and Ukikasa(13) also described similar case. Matsuyama(14) reported a case of pneumoperitoneum resulting from a ruptured liver abscess with an unusual gas shadow in the right upper quadrant of the abdomen which was overlooked on admission. Ultrasonography and CT scan are sensitive tools for the diagnosis of liver abscess. Only 40% of cases of pyogenic rupture abscess have complications amongst which intraperitoneal rupture accounts for 7.1-15.1% (15) with mortality rate of 42.8%(11). For unruptured pyogenic abscess, antibiotics and percutaneous aspiration is required but if rupture with peritonitis sets in, open drainage, peritoneal lavage and antibiotics are recommended(6-7, 9-10). In our study, patient recovered well with open drainage, peritoneal lavage and antibiotics.

Conclusion:

From our study, it is concluded that though pneumoperitoneum resulting from a ruptured liver abscess is rare, we must keep it in mind especially when all other hollow organs are normal.

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