

Pneumoperitoneum Resulting from a Ruptured Pyogenic Liver Abscess: A Case Report

Kaushal Suthar, Keyur Surati, Jainam Shah

Abstract

Pneumoperitoneum represents the perforation of intraperitoneal hollow organs in most cases. Pneumoperitoneum resulting from a ruptured pyogenic liver abscess is rare. Herein, we reported a case of pneumoperitoneum resulting from a ruptured pyogenic liver abscess in a 68 year old male with diabetes. On x-ray abdomen standing and ultrasonography of abdomen, we diagnosed a liver abscess with peptic perforation but only on exploration we found that pneumoperitoneum was only due to ruptured liver abscess in segment VII of liver without any hollow viscus 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 viscus inside the abdomen are normal.

Key words: Pneumoperitoneum, Pyogenic, liver abscess

M.B.B.S.,M.S.,Assistant Professor, Department of General Surgery, AMC MET Medical College, Sheth L.G. Hospital, Maninagar, Ahmedabad

Corresponding author email: kaushalsuthar28@gmail.com

Introduction

Pneumoperitoneum referred to the presence of free air within the peritoneal cavity but outside the viscera, representing the perforation of intraperitoneal hollow organs 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 intraabdominal solid organ like spleen, liver^[3]. Herein, we reported a rare case of pneumoperitoneum resulting from a ruptured liver abscess.

Case Report

A 68 year old male presented to our emergency department with pain in epigastrium and right hypochondrium for 3 days with chills but without fever. He had history of diabetes mellitus for 14 years on irregular treatment and frequent use of analgesics for last 2 years for bilateral joint pain. On examination, he was a febrile with temperature of 98.6⁰F. Blood pressure was

90/70 mm of Hg. Pulse rate was 110 per minute. Respiratory rate was 20 per minute. Abdominal examination revealed generalized tenderness and rigidity more in epigastrium and right hypochondrium. Blood examination revealed Hemoglobin-9 gm%, Blood count 12000/mm³, Blood glucose 350 mg%, SGPT- 70 IU/I, Alkaline Phosphatase- 90 IU/I, Amylase- 116 IU/I. X-ray abdomen standing showed free right sub-phrenic air and ultrasonography revealed about 8x4 cm sized liver abscess in segment VII with mild to moderate free fluid with internal echoes in peritoneal cavity. Therefore, a peptic perforation with liver abscess was suspected and urgent exploration done. At laparotomy, 600 ml of turbid pus was noted in the peritoneal cavity with adhesion of omentum with liver. On separation of omentum from liver, we found about 7x4 cm sized abscess cavity at segment VII with purulent material covering it and we drained abscess cavity and peritoneal pus with normal saline. All the hollow viscera and biliary system were found normal. A tube drain was kept in right paracolic gutter and laparotomy wound was closed. Antibiotics with other supportive treatment administered. E coli and Klebsiella pneumonia were isolated from

pus of liver abscess. Infection of Operation wound was noted on the 6th postoperative day and was opened for drainage. The patient was discharged on the 15th postoperative day after the operation wound was improved.

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 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, CPR, endoscopic gastrointestinal procedure) [4]. However it may also result from rupture of abscess in any intraabdominal solid organ also like spleen,

liver^[3]. In our case Pneumoperitoneum was resulted from rupture of pyogenic abscess in segment VII 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. More common in males than females and common predisposing factors are diabetes, older age^[6,9] which is similar to our study. Common causative agents are E-coli and Klebsiella Pneumonia^[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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