

Case Report

Spontaneous rupture of liver abscess with biliary communication presenting as a lumbar mass

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ABSTRACT

Pyogenic liver abscess was first reported in the writings of Hippocrates, which was based on the type of fluid recovered from the abscess related to a high mortality rate ranging between 15% and 19% at that time. However in 1938, Ochsner and De Bakey described the recommended surgical treatment as the primary treatment modality. Surgery remained the therapy of choice until the mid-1980s, when percutaneous drainage was shown to be a safer alternative in many cases. Spontaneous rupture of liver abscess may occur free in the peritoneal cavity or in neighbouring organs, an event which is generally considered as a surgical emergency, while localized rupture can be managed with drainage, either percutaneous or surgical/minimal invasive techniques and addition of appropriate antibiotic treatment. In cases where there is uneventful rupture of abscess and localized to the neighbouring organs and tissues can be successfully treated by a combination of broad-spectrum antibiotics and percutaneous drainage and endoscopic management.

Keywords: Pyogenic liver abscess, Cutaneous rupture, Biliary communication, *Klebsiella pneumoniae*, Image-guided percutaneous drainage, Endoscopic intervention

INTRODUCTION

The incidence of pyogenic liver abscess based on hospital admissions ranges from 0.029 to 1.47%.¹ Pyogenic liver abscesses are caused from diseases of the biliary tract, infectious gastrointestinal disorders spreading via the portal vein, hematogenous spread via the hepatic artery, direct extension from an intra-abdominal infection and trauma.²⁻³ There has been a change in the trend of the etiological causes and the biliary tract diseases have replaced the infections through the portal route as the most common cause of pyogenic liver abscesses. The biliary tract diseases account for about 40%, whereas the portal route about 20% of the cases. Cryptogenic abscesses, with unknown aetiology, still account for

about 20% of pyogenic liver abscesses. Previously appendicitis was reported as the most important cause of the portal aetiology.⁴ However, pyogenic liver abscess is now mostly seen in patients in their 50's to 60's and is often more related to biliary tract disease or cryptogenic in nature.⁵

Pyogenic liver abscess rupture is a very uncommon complication but, in some patients, it might increase morbidity and mortality. Two studies from Taiwan showed the rupture rates pyogenic liver abscess of 1.2% and 5.7%, respectively. The highest rate is associated with *Klebsiella* infection, and these patients have been shown to be significantly correlated with a greater abscess (>8 cm), diabetes, formation of gas increases the

tension within the abscess cavity and thus the risk of rupture of the abscess and the involvement of the left hepatic lobe.⁶⁻⁷

Imaging guided techniques not only gives information about the aetiology but also helps in the therapeutic approach by imaging guided percutaneous drainage with the combination of broad-spectrum antibiotics. Thereby, making a standard care of approach.^{8,9}

CASE REPORT

A 48-year-old lady came to emergency ward with complaints of pain in upper abdomen for 2 months and swelling over the right flank region in the last 1 month. Examination of abdomen reveals a visible lump was noted in the right lumbar region with unremarkable overlying skin. Its margins are not well defined and it does not move with respiration. There was no evidence of any free fluid in the abdomen. Laboratory findings suggestive of raised leukocyte counts with raised bilirubin levels.



Figure 1: Examination of the abdomen with a visible lump over the right lumbar region.

The patient underwent an ultrasound of the abdomen and pelvis which revealed a heterogeneously hypoechoic lesion of 5×8×5 cm through an abdominal wall defect measuring 2.5 cm arising from the liver parenchyma of the right lobe likely of infective or neoplastic etiology.

Contrast enhanced computed tomography (CECT) abdomen was suggestive of an ill-defined lesion of 70 cc over segment VI leading to capsular breach extending into inferior hepatic space and lateral abdominal wall in the right lumbar through defect of size 2 cm with a volume of 27 cc. Communication with segmental ductules, mild IHBRD and reactive cholangitis was present.

An ultrasound guided pigtail of the liver abscess was done under local anaesthesia following which 10 cc of pus was drained out. On microscopy, no organisms were identified, and culture was sterile as well. On the subsequent days, minimal output of 2-3 cc of pus was noted from the pigtail catheter with review

ultrasonography showing a predominantly unliquified abscess cavity.

On day 7 after admission, the patient developed new onset pain, erythema and fluctuation over the swelling on her right lumbar region. There were no signs of peritonitis.

On day 8, a decision to perform incision and drainage of the subcutaneous abscess was done, around 100 cc of pus was evacuated and sterile dressing was applied. The following morning, bilious soakage was noted over the wound site, and a stoma bag was applied. An output of 300 cc of bile was noted over the next 24 hours.



Figure 2: (a) and (b) CT scan showing abscess extending lateral abdominal wall in the right lumbar region.



Figure 3: Bilious output noted over the stoma bag.

On day 11, culture of the evaluated pus, *Klebsiella pneumonia* was grown which was sensitive to amikacin, piperacillin and tazobactam, cefepime and meropenem.

On day 12, endoscopic retrograde cholangiopancreatography (ERCP) was done, a right-side posterior bile duct injury was identified. Sphincterotomy and stenting was done. Post procedure there was drastic decrease in bile leak from wound. Gradually as the bile

output decreased the wound healed with secondary intension.

Subsequent days, review ultrasonography (USG) showed a decreasing trend in size of the liver abscess. Magnetic resonance cholangiopancreatography (MRCP) was planned but deferred due to history of implant.

The catheter was removed and patient was discharged with a duration of 24 days of hospital stay and was asked to follow up with ERCP reports. ERCP was done after 4 weeks of discharge in which CBD stent was removed successfully and a cholangiogram was suggestive of no obvious leak.

Table 1: Information regarding articles with respect to pyogenic liver abscess rupture in the abdominal wall.¹⁹⁻²¹

Authors	Age/ gender	Liver abscess	Liver lobe	Abdominal regions	Pathogens	Antibiotics	Percutaneous drainage	Surgery
Current report	48/ female	Solitary	Right	Right lumbar	<i>Klebsiella pneumoniae</i>	Meropenem/ piperacillin and tazobactam	Yes	No
Zizzo et al²⁰	95/ female	Solitary	Left	Epigastric/ umbilical	Proteus mirabilis	Cephalosporins/ metronidazole	No	No
Belabbes et al¹⁹	78/ female	Solitary	Left	Epigastric/ umbilical	NA	Cephalosporins/ metronidazole	Yes	No
Kawoosa et al²¹	32/ female	Multiple	Right	Right hypo-chondriac	<i>Klebsiella pneumoniae</i>	Imipenem/ metronidazole	Yes	No

DISCUSSION

Early diagnosis and management of these patients is crucial since the presentation may be subtle and not specific and offers a challenge for diagnosis. In recent decades, combined antibiotic therapy and percutaneous drainage have become the first-line treatment in most cases and has greatly improved patient's prognosis.¹⁰ The mortality rate has dropped from 70% to 6.31%.¹¹ In terms of causative pathogens, bacteria most frequently associated with pyogenic liver abscess are *Escherichia coli*, *Enterobacteriaceae*, anaerobes, and other members of the gastrointestinal flora.^{12,13} Over the past 2 decades *Klebsiella pneumoniae* has been emerging as the predominant pathogen responsible for 50% to 88% of PLA in the Asian population and it has been reported with increasing frequency in South Africa, Europe, and the United States.¹⁴

Right hepatic lobe is affected more often than the left one (2:1), while bilateral involvement occurs in 5% of cases. Pyogenic liver abscess treatment is antibiotic specific therapy, percutaneous drainage and treatment of the underlying condition. Empirical antibiotic therapy should be started immediately to reduce sepsis systemic effects and should be addressed towards typically responsible bacteria, aerobic gram-negative and gram-positive cocci (piperacillin, tazobactam, amoxicillin-clavulanate, third-generation cephalosporins), in combination with an amino-glycoside and an anaerobic drug such as metronidazole. The length of the antibiotic therapy is generally between 2 and 6 weeks. A small pyogenic liver abscess, <3–5 cm, especially if multiple, can be treated only with antibiotics, although there is no general consent. Surgical drainage is rarely indicated. However, in cases where percutaneous treatment fails, in the event

of >5 cm large abscesses, and/or multilocular pyogenic liver abscess, surgical treatment is required.^{15,16}

In this case, the patient presented as an abdominal mass with nonspecific signs of the abdominal wall that has guided us towards performing ultrasound and CT scan in order to specify the depth extension of this lesion turned out to be an abscess.

The main contribution of ultrasound is to guide the diagnostic puncture or guide the percutaneous drainage. In CT scan, the abscess was confirmed and detailed about its volume and extension to the neighbouring organs.

Once the diagnosis of liver abscess is confirmed, the treatment should be initiated urgently. Image-guided intervention and anti-microbial therapy are the mainstay of treatment while open surgical intervention is rarely required. A combination of parenteral antibiotics, image-guided percutaneous drainage using continuous catheter drainage and endoscopic intervention was a better management.¹⁷

Generally, rupture of liver abscess is considered as a surgical emergency. However, other factors such as rupture site and other underlying conditions should be taken into consideration before proceeding for conservative side of management. The sites of rupture are subphrenic and perihepatic regions, peritoneum, pleura, skin, mediastinum and pericardium. A rupture in the bowel, pericardium or mediastinum is rare. A rupture leading to peritonitis is an absolute surgical indication, while localized rupture can be managed with drainage, either percutaneous or surgical/minimal invasive techniques or addition of appropriate antibiotic treatment.¹⁸ After extensive research, we can state that this case is a FIRST with cutaneous rupture and biliary

communication presenting as lumbar mass and the SECOND case of cutaneous rupture of the right lobe liver.¹⁹⁻²¹

CONCLUSION

Pyogenic liver abscess is considered a serious entity and may present as palpable abdominal mass. Mortality and morbidity have decreased immensely with the establishment in microbiologic identification and the advancement of drainage techniques. In a rupture of abscess can always lead to increase in both morbidity and mortality. Thereby, surgical open drainage is clearly indicated only in those who fail to respond to conservative methods and those with complicated abscesses but in some cases where there is uneventful rupture of abscess and localized to the neighbouring organs and tissues can be successfully treated by a combination of broad-spectrum antibiotics and percutaneous drainage and endoscopic management. Thus, decreasing the duration of hospital stay, early recovery leading to return of normal activity.

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