Encysted Empyema: An Uncommon Complication of Pyogenic Liver Abscess

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LEARNING OBJECTIVES

• Recognize the clinical presentation, possible complication of pyogenic liver abscess.
• Understand the importance of choosing the most appropriate treatment option for management of liver abscess.
• Emphasize the importance of using abdominal ultrasound as alternative to CT scan in management of intraabdominal collection this can reduce radiation exposure and the cost of hospital care.

Case Presentation

• A 36-year-old woman presented to the emergency department with intractable right hypochondrial and shoulder pain.
• HPI: 2 weeks before the presentation the patient developed right hypochondrial and epigastric pain radiating to the right shoulder, dull aching, gradually worsening, associated with nausea, vomiting.
• PMH: Hypertension, asthma, and lactose intolerance.
• Physical Examination: The patient was found to be afibrile with elevated blood pressure and was mildly distressed due to severe abdominal pain. Bowel sounds were normoactive and the abdomen was soft, non-distended and tender to palpation in the RUQ without rebound tenderness or guarding.
• Laboratory findings:
  - ABG: pH 7.49, pO2 95 mmHg, pCO2 29 mmHg, HCO3 22 mmol/L
  - HB: 10.7 g/dL, HCT: 33.7%
  - WBC: 16.5 x 10^3/μl with 87.5% neutrophils
  - Platelet count: 660 x10^4/mCL
  - AST: 13 U/L, ALT: 13 U/L, AIP: 82 U/L, Tot Bili: 0.2 mg/dL
  - Hepatitis panel: negative
  - Troponin: <3
  - Liver abscess fluid culture: Klebsiella pneumoniae
  - Blood culture: negative

Imaging

Figure 1: Triphasic CT abdomen and pelvis. In the liver there is a 7.0 x 6.8 x 8.0 cm peripherally enhancing lesion in the posterior RIGHT hepatic lobe, with exophytic extension to involve the posterior wall of the lower thorax and adjacent retroperitoneum.

Figure 2: Laparoscopic marsupialization of liver abscess and removal of the pigtailing catheter.

Clinical Course

• CTA of the chest showed bilateral, non-occlusive acute pulmonary embolism and also revealed a right hepatic lobe mass.
• CT of the abdomen demonstrated right hepatic lobe abscess
• The patient was started on empirical antibiotic coverage with cefepime and metronidazole.
• CT-guided liver abscess drainage and pig tail catheter placement yielded 200 cc of foul-smelling, thick, maroon-brown fluid.
• Fluid culture was positive for Klebsiella pneumoniae sensitive toceftriaxone.
• Despite drainage of the abscess and appropriate antibiotic coverage the patient’s condition deteriorated as she developed signs of sepsis with worsening right sided chest pain and leukocytosis.
• Repeat CT of the chest showed a newly formed right-sided large multiloculated pleural effusion concerning for empyema
• Pleural fluid analysis confirmed it was an exudative pleural effusion.
• The patient underwent video-assisted thoracoscopic surgery decortication and laparoscopic liver abscess drainage and marsupialization.
• The patient improved after these interventions and was discharged one week after the procedure with a plan to continue oral ciprofloxacin for 10 days.

Discussion

Pyogenic liver abscess (PLA) is uncommon in the U.S. with an estimated incidence of 8-15 cases per 100,000 persons and has a mortality rate between 15% and 20%. Although most of the PLA are polymicrobial, Klebsiella pneumoniae represents nearly 20% of the cases and has been associated with pyogenic PLAs and extrahepatic infections. While being a rare complication, PLA is associated with an 18-fold increased risk of pleural empyema. Here we described a patient with pyogenic PLA caused by Klebsiella pneumoniae which was complicated by an encysted pleural empyema.

PLA of the right hepatic lobe with exophytic extension to the posterior thoracic wall is a risk factor for the development of an encysted pleural effusion complicated by empyema. Image guided percutaneous drainage is the most reliable method for both diagnosis and treatment of a single, unilocular liver abscess. However, this procedure may increase the risk of developing a pleural effusion and subsequent empyema suggesting that these cases may benefit from early surgical intervention rather than image guided drainage.

Conclusion

Traditional surgical drainage may be a better treatment option in patients with PLA whose characteristics suggest an increased risk of developing pleural empyema.

References

• Lederman ER, Crum NF. Pyogenic liver abscess with a focus on Klebsiella pneumoniae as a primary pathogen: an emerging disease with unique clinical characteristics. Am J Gastroenterol. 2005 Feb;100(2):322-31.