



A “fishy” cough: hepatobronchial fistula due to a pyogenic liver abscess

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A hepatobronchial fistula is an anatomic communication between the liver parenchyma and the bronchial tree. Major causes of such fistulae include inflammatory conditions resulting from obstruction of the biliary tract and infectious processes, such as pyogenic liver abscesses, amoebiasis, and hydatid cysts.

We report a rare case of a patient (with a chronic, recurrent hepatic abscess) who suffered a persistent, productive cough resulting from a hepatobronchial fistula.

Case report

A 49-year-old white male presented to the emergency department complaining of three days of fever, chills, shortness of breath, and cough productive of “fishy” tasting sputum. The patient had a history of a chronic recurrent hepatic abscess diagnosed 2 years prior, at which time CT imaging revealed a 5.5 cm abscess localised to the medial segment of the right lobe of the liver.

The abscess had been refractory to multiple courses of intravenous antibiotics, ultrasound-guided percutaneous drainage, and wedge resection. Previous intraoperative tissue samples were negative for malignancy and cultures were negative for aerobic, anaerobic, fungal, and acid-fast organisms. On examination, he was afebrile and his vital signs were normal. He was coughing persistently.

Gross examination of his sputum revealed a dark expectorate. The remainder of his physical examination was unremarkable. Laboratory evaluation revealed a white blood cell count of 13,600 per cubic millimetre with a predominance of neutrophils. Liver associated enzymes revealed an alkaline phosphate level of 747 U/L.

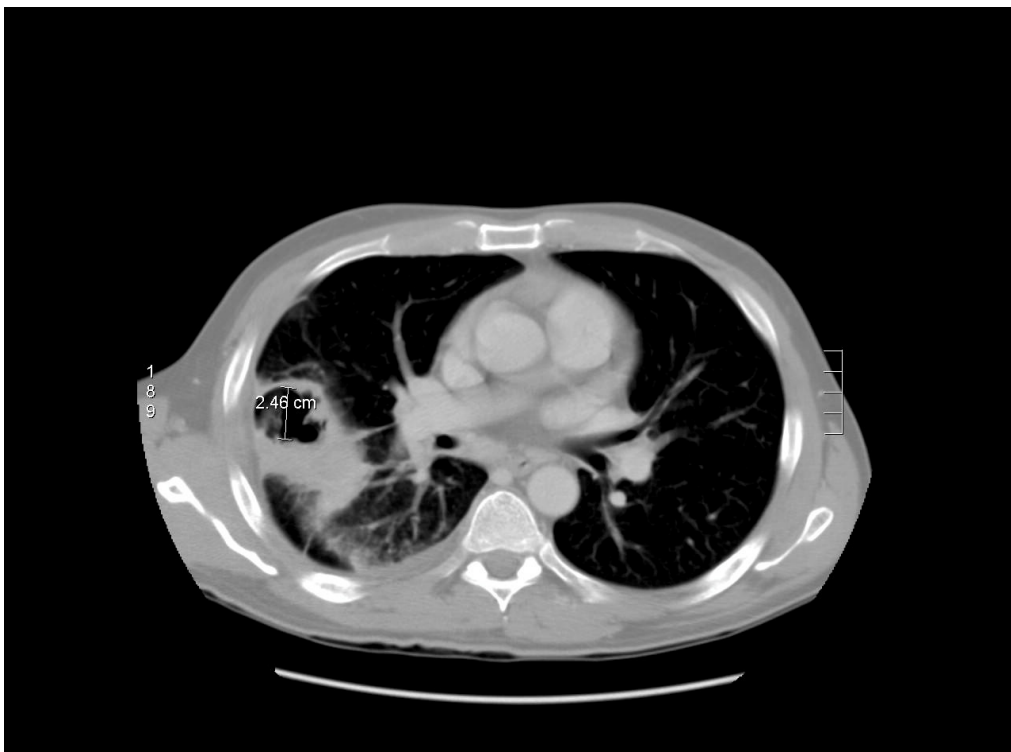
Plain chest radiography was notable for pneumobilia and an elevated right hemidiaphragm. CT scan demonstrated a residual 8cm septated hepatic abscess (Figure 1) and a fistulous tract communicating with the bronchial tree (Figure 2). A pigtail drain was placed under CT guidance and the patient was empirically started on ceftriaxone, ciprofloxacin, and metronidazole.

Cultures of the aspirate later grew multiple organisms to include *Clostridium perfringens*, *Klebsiella pneumoniae*, and *Enterococcus faecalis*. At 4-week follow-up, the patient reported termination of symptoms and CT scan demonstrated near-complete abscess involution. The patient was continued on the same antibiotic regimen for 6 more weeks and was followed up with serial CT scans to assure complete resolution of the abscess.

Figure 1. CT abdomen demonstrating large hepatic abscess



Figure 2. CT abdomen illustrating diaphragmatic defect and fistulous tract communicating with bronchial tree



Discussion

Pyogenic hepatic abscesses are rare and seldom communicate with the pleural space, owing to the tough membranous barrier provided by the diaphragm. As a result, very few cases of hepatobronchial fistula have been reported in the literature.

Our patient presented with a hepatobronchial fistula secondary to a recurrent pyogenic liver abscess. In several large autopsy series, the prevalence rate for incidental hepatic abscess varied from 0.029–1.47%. The most commonly reported cause is biliary disease—with abscess typically forming secondary to ascending cholangitis from extrahepatic obstruction.¹ Other causes include infections, such as appendicitis, which originate in the drainage distribution of the portal vein, leading to abscess formation via seeding or embolisation. However, in the vast majority of cases, despite extensive investigation, the cause remains undetermined.

Complications of hepatic abscesses typically occur secondary to spontaneous abscess rupture or direct extension into adjacent viscera.^{1,2} Though uncommon, the anatomic regions most characteristically involved are the pleural space and the lung parenchyma. In the largest case review series published to date, Oschner et al reported a 15% incidence of pleuropulmonary involvement secondary to pyogenic hepatic abscess.¹ Resultant pulmonary complications include pneumonia, empyema, and subphrenic abscess. Similar syndromes are also seen with hydatid cysts and amoebic abscesses.^{3,4}

Historically, surgical drainage of the abscess and correction of the fistulous tract have been the mainstays of therapy.^{5,6} However, in recent decades, authors have reported success with CT and ultrasound-guided catheter drainage followed by long-term intravenous antibiotics—the technique chosen for our patient.^{7,8}

This is an interesting case of an uncommon complication of a hepatic abscess. Although rare, the presentation of cough with peculiar tasting sputum in a patient with a known hepatic abscess should raise suspicion for a hepatobronchial fistula. Based upon current literature, once the diagnosis is established, aspiration and drainage of the fistula accompanied by prolonged antibiotic therapy should be adequate for abscess resolution and healing of the fistula.

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