

A rare case of *Fusobacterium necrophorum* liver abscesses

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Abstract

Liver abscesses are an uncommon disease that can present with vague symptoms. *Fusobacterium necrophorum* causing liver abscesses is a rare condition and only a few cases have been reported. An 88-year-old female presented to her primary care physician with one week of fevers, night sweats, chills, fatigue and vague right upper quadrant abdominal pain. She denied nausea, vomiting, constipation, diarrhea and unintentional weight loss. A computed tomography scan of the abdomen showed two liver abscesses in the right lobe as well as extensive diverticulosis. Percutaneous drainage was performed and draining catheters were placed in the abscesses. Culture of the abscess fluid grew *Fusobacterium necrophorum*. She was treated with ceftriaxone and metronidazole as per sensitivities. Rare cases of *F. necrophorum* hepatic abscesses have been published. The source of infection described in reported cases included hematogenous spread from dental caries/peritonsillar abscess and those involving the gastrointestinal tract resulting from inflammation of the bowel wall or from inflamed diverticuli via the portal circulation. In one study, thirteen cases of liver abscess due to *F. necrophorum* were studied, and two of these cases had diverticular disease without inflammation.

Introduction

Liver abscesses are an uncommon disease that can present with vague symptoms. However, they are the most common cause of visceral abscesses with a median age of just under 60 years and preponderance towards the male sex.¹⁻³ The mechanism by which these abscesses form seems to be by entry through the portal circulation or biliary tract, though hematogenous spread is also possible. The most commonly implicated organisms are *Klebsiella species*, *Escherichia coli* and the *Enterococcus species*. Risk factors associated with increased incidence of liver abscesses

include diabetes mellitus, hepatobiliary and pancreatic disease, and liver transplantation.⁴⁻⁶ *Fusobacterium necrophorum* causing liver abscesses is a rare disease and only a few cases have been reported. We present a case of liver abscesses in an immunocompetent elderly female with past medical history of diverticulosis, COPD, hypertension, and hysterectomy.

Case Report

An 88-year-old female presented to her primary care physician with one week of fevers, night sweats, chills, fatigue and vague right upper quadrant abdominal pain. She denied nausea, vomiting, constipation, diarrhea and unintentional weight loss. The pain did not have any relation to food intake. A computed tomography (CT) scan of the abdomen was performed, showing two liver abscesses in the right lobe as well as extensive diverticulosis as seen in Figure 1. There was no evidence of any thrombosis on the CT scan. Percutaneous drainage was performed and a draining catheter was placed in the larger abscess as seen in Figure 2. Anaerobic culture of the abscess fluid grew *Fusobacterium necrophorum*.

She was treated with ceftriaxone and metronidazole. A repeat CT scan was performed for evaluation of abscess progression. It showed an increase in size of the second abscess, necessitating a second percutaneous drainage and a draining catheter to be inserted. The patient was treated with antibiotics for a total of 10 days in hospital. She was subsequently discharged with a PICC line for antibiotics at home and drains remained in place for abscess drainage. Follow up CT scan was performed, showing complete resolution of the abscesses.

Discussion

Fusobacterium necrophorum is a non-motile Gram-negative anaerobic bacillus that is present in the oropharynx and gastrointestinal tract. It is well known for its association with Lemierre's syndrome. The potential for *F. necrophorum* to cause intra-abdominal abscesses is still underreported. Rare cases of *F. necrophorum* hepatic abscess have been published. The source of infection described in reported cases include hematogenous spread from dental caries/peritonsillar abscess and those involving the GI tract resulting from inflammation of the bowel wall or from inflamed diverticuli via the portal circulation.⁷ In a published case review, 13 cases

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of liver abscess were due to *F. necrophorum*. Two of these cases had diverticular disease with the co-existence of diabetes mellitus - a known risk factor for liver abscess formation.⁸ Our patient had severe diverticular disease as per CT scan, which is likely the source of infection as no other sources could be identified.

The radiological features of a liver abscess are variable and can be wide ranging. Bacterial abscesses are generally multiple in nature and usually have hypoattenuating central lesions.⁹ Occasionally, they can be solid or contain gas.¹⁰ A typical feature would be the double target sign, which is where a hypoattenuating central lesion is surrounded by an enhancing rim in computed tomography with contrast.¹¹ This can be seen to some extent in Figure 1.

The differential radiologic diagnoses can include metastases from malignancies (specifically necrotic metastases), liver cysts, biliary cystadenoma, hepatic hemangioma and hepatic infarct. Metastatic lesions tend to lack the double target sign and do not contain gas, but may have calci-



Figure 1. Primary abscess involving segments 7 and segment 6 of the liver. This measures approximately 8×5.5×9 cm. Secondary abscess in segment 6. This measures approximately 3.6 cm.

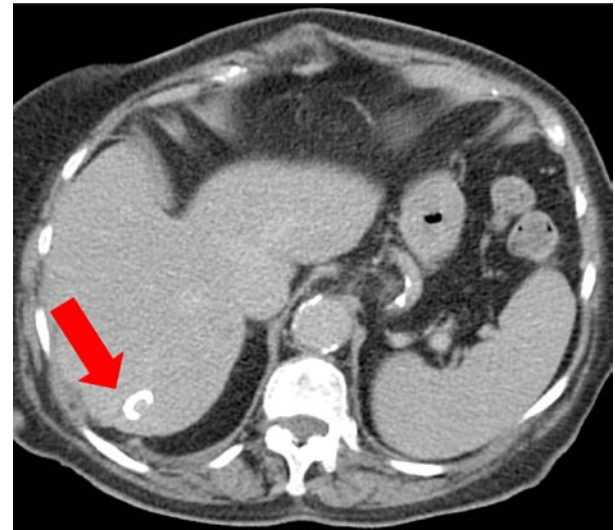


Figure 2. Post-drainage: arrow showing placement of draining catheter.

fications.¹² Cystic lesions in the liver tend to have a homogenous hypoattenuation and an indistinguishable wall that does not enhance with contrast. They may also have a septate appearance that is not seen in abscesses.¹³ Although hypoattenuating, hemangiomas on the other hand show hyperattenuation in the delayed phase, where contrast fills these vascular lesions.¹⁴ Hepatic infarction, in comparison, tends to be vaguely defined lesions that are usually peripheral and have a wedge appearance.¹⁵

In the cases reviewed, treatment duration ranged from 3-12 weeks. The two liver abscesses in which patients had an underlying diverticular disease were treated for 8 and 12 weeks respectively.⁸ The recommended course of treatment of pyogenic liver abscesses is 4-6 weeks; however, no randomized trials exist to describe optimal duration of therapy.¹⁶

F. necrophorum isolates are usually sensitive to treatment with metronidazole, with 2% resistance to penicillin and 15% to erythromycin.¹⁷ The majority of the published cases combined metronidazole with another broadspectrum antibiotic with Gram-negative coverage. These have included ciprofloxacin, ceftriaxone, ampicillin/clavulanic acid, tazobactam/piperacillin and meropenem.¹⁷

Eight of 13 cases required drainage of the abscess in addition to the antibiotic therapy, though no mention was made regarding the reason to do so. All of the 13 cases reported achieved complete cure of the abscesses. Interestingly, some case reports describe a prolonged incubation period to

obtain positive cultures. Some cases have reported positive cultures after 7-11 days.⁸ It is essential that both aerobic as well as anaerobic abscess fluid cultures are performed since *fusobacterium* is an anaerobe. This is the primary reason why the identification of this organism is missed. The importance of this is because these organisms are highly sensitive to metronidazole as stated above.¹⁸

Conclusions

Fusobacterium necrophorum is a rare organism causing liver abscesses. It should, however, be considered in the differential diagnosis as it is highly sensitive to antibiotic treatment. The source of infection may not always be identified, but oropharyngeal and GI tract infections should be considered.

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