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CASE REPORT

Successful laparoscopic management of a hepatic abscess caused by a fish bone

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ABSTRACT

Background: Hepatic abscess is a rare condition but comes with heavy consequences if not diagnosed and managed properly. Early detection of this pathology is challenging because of the variety and lack of specificity of symptoms but is necessary for accurate management.
Case report: We report a case of pyogenic liver abscess secondary to the migration of an ingested fish bone in a 74-year-old female. We used laparoscopic surgery to drain the abscess, remove the foreign body responsible and look for the perforation site. Parenteral antibiotherapy was added to the surgical treatment.
Conclusion: Early diagnosis of hepatic abscess caused by the migration of a foreign body remains a challenge. In our opinion, laparoscopic surgery associated with antibiotics is the safest and most effective therapeutic option.

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KEYWORDS
Hepatic abscess; fish bone; laparoscopic drainage; foreign body

Introduction

Hepatic abscess is a rare (2.3 per 100,000 population) but severe condition with a high morbidity and mortality rate [1,2]. Even though this condition has been known and studied since Hippocrates (around 400 BC) [3], the diagnostic and treatment remains a challenge. There are various etiologies to this pathology (traumatic, arterial hematogenous spread, biliary tract, …) each of which requires a specific therapeutic approach [4]. The case we describe is a pyogenic liver abscess supposedly caused by the perforation of the gastro-intestinal tract by an ingested foreign body, a rare but possibly lethal etiology.

The case

A 74-year-old female was admitted to our Emergency Department (ED) with abdominal pain. She had no surgical history but had hypothyroidism treated with L-thyroxin once a day and asymptomatic multicystic kidneys. The pain began acutely after a cup of coffee a few hours before admission. The clinical examination was unremarkable. Laboratory tests revealed a neutrophilic leukocytosis and a slightly elevated C-reactive protein (CRP). The abdominal echography showed no abnormality of the gallbladder and known multicystic kidneys. The pain disappeared spontaneously and the patient was discharged. Three weeks later the patient came back to the ED with pain in the right hypochondrium associated with fever (temperature between 38 and 39 °C), shivering, confusion, myasthenia and a loss of appetite for 3 days. Physical examination of the abdomen was reassuring (absence of contracture, tenderness, defense and palpable masses). The blood sample revealed following abnormalities (Table 1). Hemocultures were collected and a parenteral antibiotherapy by ceftriaxone 2 g once a day was started. A *Streptococcus anginosus* was found in the hemocultures and the antibiotic was switched to Amoxiclav 1 g 4×/day. A contrast-enhanced computer tomography (CT) of the abdomen on admission day showed a hypodensity in the segment IVa of the liver and a thick-walled gallbladder (Figure 1).

As the fever and the pain remained unchanged a follow-up echography was done. The hepatic hypodensity had grown in size. It was decided to realize CT-guided percutaneous puncture of the hepatic lesion. Twenty cc of pus were extracted. Bacteriologic samples revealed numerous colonies of S. anginosus and *Streptococcus constellatus*.

The patient then reported pain improvement and the fever disappeared. C-reactive protein and

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Table 1. Laboratory findings 3 weeks after the first admission to the ED.

Exam	Result
C-reactive protein (CRP) mg/L	244.85 (Normal <500)
White blood cell count (per L)	11.16×10^9 (Normal $3.9–11.1 \times 10^9$)
Absolute neutrophil count (per L)	10.245×10^9 (Normal $2100–7500 \times 10^9$)
Absolute lymphocyte count (per L)	0.324×10^9 (Normal $1000–3000 \times 10^9$)
Sodium mmol/L	126 (Normal 137–145)
Potassium mmol/L	2.8 (Normal 3.5–5.4)
Chlorure mmol/L	83 (Normal 98–107)
Alkaline phosphatase UI/L	240 (Normal 38–126)
Aspartate transaminase (GOT) UI/L	67 (Normal 5–40)
Alanine transaminase (GPT) UI/L	60 (Normal 5–40)
Gamma-GT UI/L	91 (Normal 11–50)

Figure 1. Injected CT scanner on admission day: axial plan through the liver with visible avascular hypodensity.

Figure 2. Injected CT scanner, axial plane through the hepatic abscess. Rim-enhancement with septation containing foreign body.

leucocytes normalized as well. A week later the patient underwent another CT scan because of a new sudden episode of fever and an alteration of the patient's general condition. The recurrence of the hepatic abscess (measuring 5.6 cm of diameter) was found along with the presence of a foreign body in the cavity (Figure 2).

The indication of a surgical drainage was decided. The patient was operated on the following day using laparoscopic surgery.

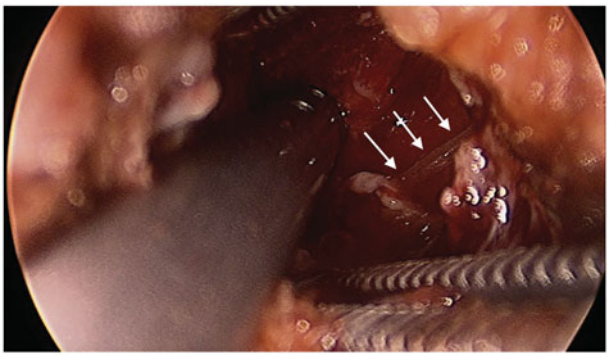

Figure 3. Laparoscopic view of the abscess cavity with the foreign body inside.

Surgical method

We started the surgery with a cholecystectomy. We encountered very little adhesions between the gallbladder and the greater omentum, none between the liver, the duodenum and stomach.

Access to the abscess was then achieved thought puncture of the liver. Bacteriologic and cytologic samples were made. A 3.5 cm long thin and sharp foreign body was extracted from the cavity and sent to anatomopathology (Figures 3 and 4). A fish bone was confirmed.

Per-operative echography was used to guarantee the most direct access of the Chiba needle that was inserted in the liver towards the abscess, as a direct guide.

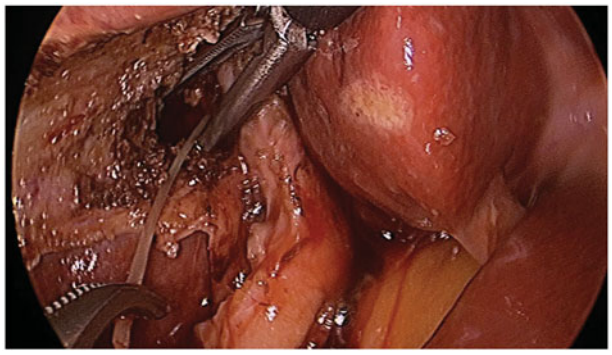

Figure 4. Laparoscopic view of the foreign body removal from the drained abscess cavity.

Then, the access path was enlarged using electrocautery. A drain was left in place in the abscess cavity. No complication resulted from surgery.

The hospital stay was 2 weeks because of a parenteral antibiotherapy (Amoxiclav 1 g 4×/day). After the surgery, CRP and leucocytes normalized. Pain and fever disappeared. The surgical drain was removed on day six. One week after the laparoscopy, the CT scanner showed a regression of the lesion and a progressive hepatisation of the cavity.

The patient was discharged with an oral antibiotherapy (Amoxiclav 875 mg 3×/day for 2 weeks) and pain medication.

Discussion

The ingestion of foreign bodies (FB) is common in children under 10 years of age (75%) but also exists in adults (25%) [5]. Even though about 80% of the FB passes uneventfully through the digestive tract within a week [5,6], in 20% of the cases a complication occurs and endoscopy or surgery is required [6]. A hepatic abscess caused by the perforation and migration of an ingested FB of the gastrointestinal tract is one of the multiple possible complications and was described for the first time by Lambert in 1898 [7].

The most frequent site of perforation is the stomach followed by the duodenum and the colon [8].

Sharp and thin objects are more likely to perforate the GI tract and therefore generate an abscess. The most common foreign bodies responsible for this pathology are fish bones followed by toothpicks and chicken bones [8].

Even though major advances in imaging occurred over the years the early diagnostic of this condition remains a challenge for many reasons:

First of all, because the variety of the symptoms [8–10] (abdominal pain, fever, nausea, loss of appetite, jaundice) and laboratory findings [9] (C-reactive protein, leucocytes, elevated liver enzymes) which are not specific.

Secondly, in most of the cases anamneses is not helpful. Only about 5% of the patient mention the ingestion of a FB [9] and the swallowing and perforation of the FB might have occurred a few weeks back and being asymptomatic since then.

Thirdly, no radiological exam can guarantee an early diagnosis, owing to the various nature of foreign bodies involved in hepatic abscess caused by perforation of the digestive tract and migration.

S. anginosus is one of the bacteria frequently incriminated. This Gram-positive non-hemolytic viridans *Streptococcus* belongs to the normal flora of the human oral cavity and to the gastro-intestinal tract and is known for its ability to cause abscess [11].

Drainage laparotomy and laparoscopy, endoscopy, percutaneous radiological intervention and ultrasound guided fluoroscopy have all been described as successful methods of abscess drainage and removal of the foreign body.

Even though a positive outcome was reported without the removal of the FB [12] the success rate of such conservative approach remains low (9.5%) [9].

We considered a laparoscopic drainage surgery was the best option mainly for two reasons.

First of all, it gave us the opportunity to confirm the absence of gastro-intestinal perforation.

Secondly, it seemed less invasive but as effective as laparotomy, frequently used to drain hepatic abscesses and remove the responsible foreign body.

In our case, the site of gastrointestinal perforation remains as in 5% of the reported cases a mystery [13]. Neither the complementary radiological exams nor the laparoscopic abscess drainage surgery showed adhesions between liver and other abdominal structures or a thickened gastrointestinal wall, both signs of possible perforation site.

As for the use of antibiotics, there is to our knowledge no consensus about the length of the therapy, the route of administration (IV?PO?) and whether we should use them or not.

Some say infection caused by the *S. anginosus* group requires a drainage of the abscess [14] and an antibiotherapy, theory we agree on.

Conclusion

We report a case of a hepatic abscess caused by the migration of a fish bone in the liver. Even though no gastrointestinal lesion were found and other migration pathways could not be excluded,

a digestive tract perforation remains, in our opinion, the most probable cause of abscess in the described case.

As in most of the cases, the diagnosis was delayed by the lack of specificity of the symptoms and sensitivity of the complementary radiological exams.

Laparoscopic surgery resulted the safest and most effective therapeutic option to drain the abscess, find and treat if necessary a digestive perforation and remove the responsible FB.

Disclosure statement

No potential conflict of interest was reported by the authors.

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