

Liver abscess caused by ingestion of fishbone

A case report

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Abstract

Rationale: The penetration of a foreign body through the stomach wall and causing liver abscess is rare. A case of liver abscess caused by secondary bacterial infection was reported in the current study.

Patient concerns: A 58-year-old male patient had a history of eating fish and presented with recurrent fever with chills. The patient had a previous fever for 9 days without any obvious inducement and the highest body temperature rose to 40.8°C, along with fear of cold and chills. Body temperature declined to normal value after 5 days of infusion treatment (drugs were unknown) in the local clinic. Two days afterward, his body temperature again rose to 40.3°C at its highest.

Diagnosis and intervention: Abdominal computed tomography (CT) showed that there was a quasicircular low-density focus in the left hepatic lobe which was most likely a liver abscess. A dense strip was found in proximity to the left hepatic lobe, implying the retention of a catheter in the upper abdominal cavity or a foreign body. On conditions of related preoperative preparations and general anesthesia, the left hepatic lobe was resected with the laparoscope. During the operation, a fish bone was found in the liver. Postoperative symptomatic and supportive treatment was carried out without antibiotics for liver protection.

Outcomes: The patient was cured through surgical treatment and found to be in a good condition. The patient was successfully discharged and recovered well in the follow-up visit 3 months after the operation.

Lessons: Liver abscess caused by fish spines is rare. The contrast-enhanced CT of the abdomen and the minimally invasive abdominal operation both played critical roles in the diagnosis and treatment of the case. The general population, who mistakenly eat fish bones, should seek medical treatment as soon as possible.

Abbreviations: ALB = albumin, CT = computed tomography, HB = hemoglobin, PLT = platelets, RBC = red blood cell count, WBC = white blood cell count.

Keywords: fish bone, foreign bodies in alimentary tract, liver abscess

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JL and DZ contributed equally to this work.

Informed written consent was obtained from the patient for publication of this case report and accompanying images.

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1. Introduction

Foreign bodies in the digestive tract are a common emergent situation in clinical practice that are generally caused by the mistaken consumption of diverse types of foreign bodies, such as chicken bones, fish-bones, toothpicks, and coins.^[1,2] Under normal circumstances, foreign bodies can be smoothly eliminated from the digestive tracts without any mal-adaptation.^[3] Only a very small amount of foreign bodies can be retained in the digestive tract and can lead to complications. Secondary liver abscess caused by the transfixion of foreign bodies through stomach walls is seen more rarely.^[4-6] A case of liver abscess induced by the formation of a sinus after a foreign body penetrated the stomach wall was reported in this case study.

2. Clinical data

This study was approved by The Clinical Research Ethics Committee of our hospital. The patient provided informed consent for publication of the case. The patient was a Chinese male peasant of the Han nationality and was 58-year old. He visited our hospital on April 14, 2017, after 9 days of recurrent fever with chills. According to the statement of the patient, he had a previous fever for 9 days without any obvious inducement and the highest body temperature rose to 40.8°C, along with fear of cold and chills. Body temperature declined to normal value after 5 days of infusion treatment (drugs were unknown) in the local clinic. Two days afterward, he was treated in a local county level

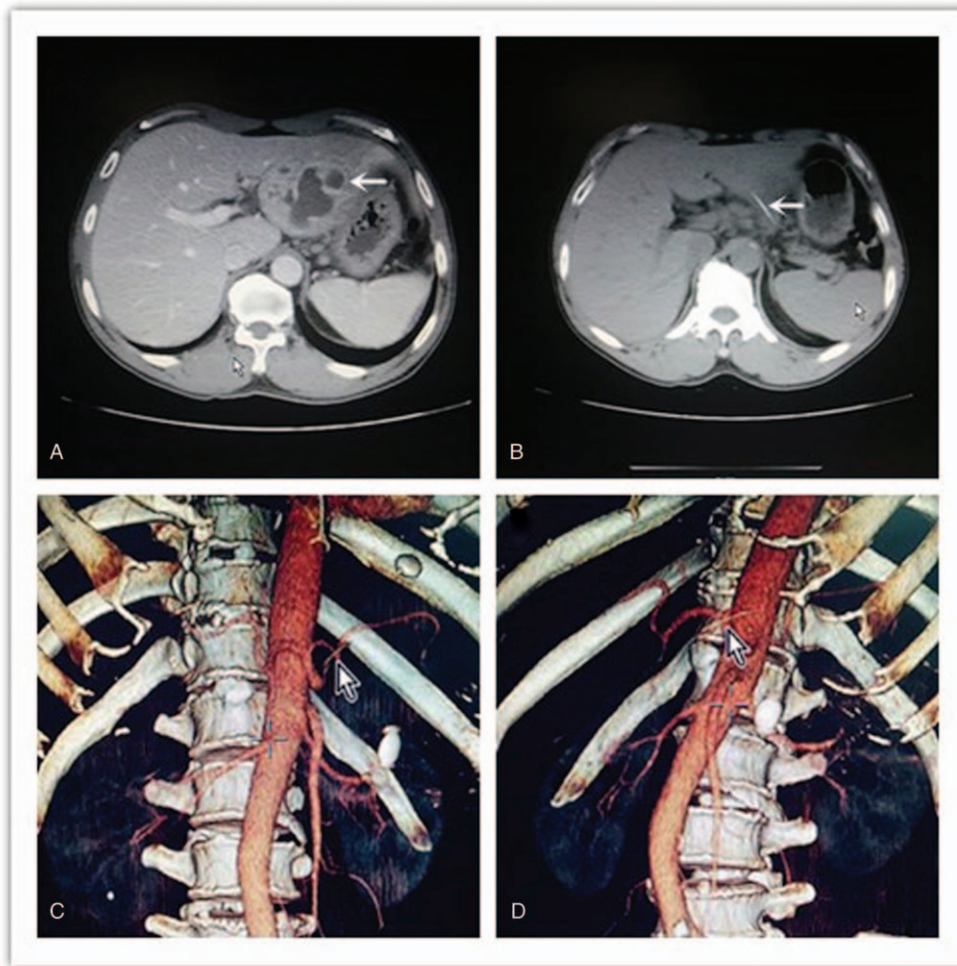


Figure 1. Preoperative CT and reconstructed CT-3D images. A, A quasi-circular low-density region with circular enhancement can be found in the left hepatic lobe in the enhanced phase, indicating the nonuniform density of the focus. B, A strip of high-density shade was observed between the stomach wall and the liver in the plain-scan phase. C and D, The reconstructed 3D images show that the 2 ends of the foreign body were not associated with the enterocolic and important vessels. CT= computed tomography, 3D= three-dimensional.

hospital as the body temperature again rose to 40.3°C at its highest. The body temperature reduced to normal value after anti-infective therapy (drugs were unknown), and the patient visited the Affiliated Hospital of Guilin Medical University for further treatment.

Twenty years previous, he had hepatitis A and had been cured. He had smoked a pack of cigarettes a day for about 30 years, and denied excessive drinking and household heredity factors. The abdominal physical examination revealed the abdomen was flat and soft. The patient had no tenderness and rebound tenderness, and no other masses were found when touching the abdomen. The laboratory examinations found the hemoglobin B (HB), red blood cell count (RBC), white blood cell count (WBC), neutrophil count, lymphocyte count, platelets (PLT), and albumin (ALB) were 98 g/L, $3.17 \times 10^{12}/L$, $18.05 \times 10^9/L$, 89.8%, 6.9%, $281.0 \times 10^9/L$, and 27.80 g/L, respectively. No abnormality was detected in alpha fetal proteins. The results of B-mode ultrasound detection of the abdomen revealed a mixed mass in the left hepatic lobe. Abdominal computed tomography (CT) showed a quasi-circular low-density focus in the left hepatic lobe, which was probably a liver abscess. A dense shape was found in

proximity to the left hepatic lobe, implying retention of a catheter in the upper abdominal cavity, presence of a foreign body, or a strip of intra-abdominal calcification, as shown in Fig. 1.

After conducting a symptomatic and supportive treatment such as anti-infection intervention using piperacillin sodium and sulbactam sodium, the fever of the patient decreased. On conditions of making related preoperative preparations and general anesthesia, the left hepatic lobe was resected with the laparoscope. In the operation, it was found that the tissues around the left hepatic lobe and the stomach were tightly adhered and a giant abscess with a fibrotic surface was observed. After carefully separating the intestinal adhesion in the enterocolic and around the left liver, the ultrasonic scalpel was used to resect the whole left hepatic lobe, followed by hemostasis of the wound using argon plasma coagulation. The assistant pulled the stomach downward and the organized abscess in the lesser curvature side was separated carefully using the ultrasonic scalpel. This revealed a liver abscess caused by the transfixion of a fish bone through the stomach wall that had stabbed into the liver. The fish bone was then separated, removed, and measured to be 4 cm long, as shown in Fig. 2. Comparison with the CT image proved that the foreign

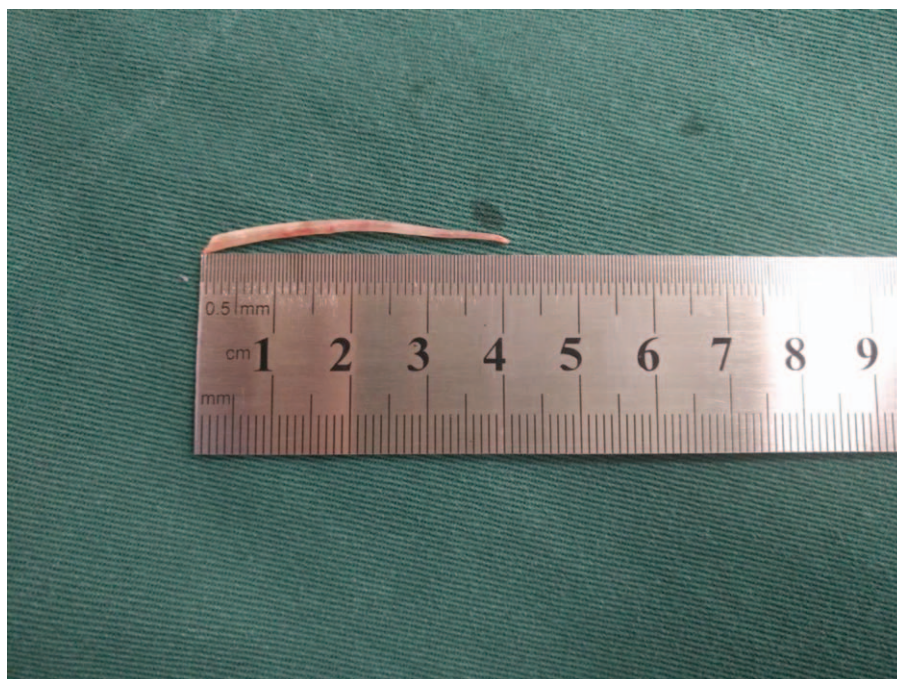


Figure 2. The elongated fish bone was about 4 cm long.

body was completely extracted. The umbilical incision was enlarged to remove each sample.

The postoperative symptomatic and supportive treatment was carried out without antibiotics for liver protection. The patient was found to be in a good condition and successfully discharged. He recovered well in the follow-up visit 3 months after the operation.

3. Discussion and analysis

Bacterial liver abscesses are common clinical infectious disease of the liver and mainly present as fever, chill, and stomachache. Bacteria can invade the liver through three routes (i.e., biliary tracts, hepatic arteries, and portal veins) to cause the abscess. In comparison, the liver abscess that resulted from the penetration of foreign bodies through the stomach wall after entering the digestive tracts is rarely seen in the clinical practice.

Since the first report of the liver abscess resulting from foreign bodies in digestive tracts in 1898, more cases of concurrent liver abscess induced by foreign bodies in the digestive tract have been reported. Despite these observations, this type of liver abscess is still relatively rare which serves as the main reason for the treatment failure of this type of liver abscess.^[7] By referring to relevant research in PubMed, about 60 cases have so far been reported.^[8] Normally, 80% to 90% of the foreign bodies in the digestive tract can be eliminated from the body,^[3] while only less than 1% of foreign bodies are able to cause complications such as peptic ulcer perforation.^[9] The reasons are as follows: first, gastric acid (equivalent to 0.2%–0.4% hydrochloric acid) is secreted in the stomach, which is able to soften and dissolve fish bones, which are a type of bones mainly comprising calcium. The fish bones can then not damage the digestive tract. Second, even if the stomach wall is punctured by fish bones, those entering the digestive tract are less likely to incur complications considering

the rich blood supply of the stomach wall and the strong antibacterial activity of the gastric juice.^[10] Third, a fish bone can cause a small peptic ulcer perforation, which is adhered with local inflammatory hyperplasia, which can be cured rapidly.

The limitation of inflammatory resorption is also one of the reasons that it is difficult for fish bones in the digestive tract to cause complications.^[11] However, when the fish bone is sufficiently large or hard that it cannot be digested by gastric juice or pass through, due to pyloric stenosis, the sharp fish bone is very likely to penetrate the stomach wall due to the rapid contraction of the stomach during peristalsis. Due to the proximity of the stomach to other anatomical structures, the left hepatic lobe is generally the predilection site for liver abscess caused by fish bones.^[12] In the case, the liver abscess was caused by the transfixion of the fish bone through the stomach wall stabbing into the liver in the left hepatic lobe. The patient showed refractory or relapsed fever in the clinic and did not have any positive signs in the physical examination of the abdomen.

Under these circumstances, contrast-enhanced CT played a critical role in the diagnosis. Compared with the abdominal X-ray sheet and gastrointestinal endoscopy, the contrast-enhanced CT is a significantly better examination method, which can assist diagnosis and visualize the position of the foreign body to provide important information on the relationship of the foreign body with the surrounding organs and vessels as a reference for the operative approach.

On diagnosis, foreign bodies in the upper digestive tract should be treated as soon as possible by taking proper measures to prevent serious complications occurring such as peptic ulcer perforation, bleeding, obstruction, and septic shock. Most foreign bodies in the digestive tract can be automatically discharged from the gastrointestinal tract while extraction of about 10% to 20% of the foreign bodies in upper digestive tracts requires endoscopic observation. About 2% of foreign bodies

should be extracted through surgery.^[13,14] Once a foreign body is stuck in the digestive tract, people in many regions of China tend to swallow the foreign body by swallowing steamed bread or rice and vegetable rolls. However, this method is not recommended as it may cause incarceration of the foreign body, aggravating the disease, and increasing treatment risk.

In general situations, proper therapeutic methods can be selected according to the size, shape, type, and number of foreign bodies. If the foreign body has a width larger than 2 to 2.5 cm, it cannot get through the pylori and if it is longer than 5 to 6 cm, it cannot pass through the duodenum preventing it from being discharged out of the body through the digestive tract.^[15] Foreign bodies of this size require gastroscopic extraction.^[15] In the case, considering that the fish bone had penetrated the stomach wall stabbing into the left lobe of the liver and led to recess, it was suggested to perform surgical treatment. At present, surgical treatment for this situation mainly includes laparoscopic surgery and open operation. As the laparoscopic surgery has a small wound and slightly influences the abdominal tissues, it has a low infection rate after completing peritoneal lavage and is more favorable for rapid postoperative rehabilitation. For this reason, the surgeon adopted the laparoscopic resection of left hepatic lobe, during which the left hepatic lobe was completely resected. After the operation, the organized abscess in the lesser curvature side and the fish bone penetrating the stomach wall that had stabbed into the liver could be found. After carefully separating and extracting the fish bone, a residual sinus was found on the stomach wall.

In summary, the complications caused by foreign bodies in the digestive tract should be comprehensively assessed according to the medical history of the patient and based on laboratory examination and imaging manifestation. The patient in this case did not describe definite ingestion of foreign bodies at questioning which was probably because the fish had been ingested a long time prior to complication. After obtaining the medical history and after the operation, it is clear that the patient had eaten fish before the illness. The contrast-enhanced CT of the abdomen provides favorable assistance due to the finding of foreign bodies in digestive tracts. It can help to diagnose the liver abscess but can also guide the selection of the therapeutic regimen. In the treatment, it was suggested to use antibiotics to control the infection at first. At the same time, drainage of the abscess is generally needed, and the infection could not be completely treated before removing the fish bone.^[6] Regarding the selection of the operation method, one should follow the principle that endoscopic therapy should be considered as a priority, followed by minimally invasive endoscopic surgery and then an open operation successively.^[15] A reasonable and personalized therapeutic regimen should be determined. Meanwhile, this case study is expected to attract the attention of people who eat fish

and those who mistakenly eat fish bones should seek medical treatment as soon as possible.

Author contributions

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Validation: yaqun Yu, Qian Chen.

Visualization: Qian Chen.

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