Accidentally Ingested Foreign Body Associated with Liver Actinomycosis: the Diagnostic Value of Imaging

Radu Badea¹², Liliana Chiorean³, Daniela Matei²⁴, Andrada Seicean²⁴, Vasile Andreica²⁴, Emil Botan⁵

INTRODUCTION
Accidental ingestion of foreign bodies is a relatively common situation, in the large majority of cases being followed by an unobserved passing of the objects through the digestive tract and their elimination in about a week. We present a patient with liver actinomycosis developed in relation with a gastric (antral) perforation secondary to accidental foreign body ingestion. The complexity of the case raised many problems concerning the imaging diagnosis, especially due to the pseudotumoral aspect of the liver lesion, which extensively involved the retroperitoneal area, the stomach and the pancreas. However, the presence of an image suggesting a foreign body into the gastric wall, in correlation with clinical, biological, morphological and imaging studies solved the case.

Key words: foreign bodies ingestion – actinomycosis – liver abscess – imaging techniques – contrast-enhanced ultrasound.

CASE REPORT
A 54 year old patient presented at the emergency department with intense pain in the upper abdomen, mainly in the epigastrum and right upper abdominal quadrant, associated with postprandial bloating, constipation, loss of appetite, fatigue and important weight loss (6 kilos in 3 weeks). The patient was an amateur fisherman and frequently ate fish. The laboratory investigations revealed a moderate inflammatory syndrome, and most often fish bones are responsible [2]. Perforations are possible in any segment of the gastrointestinal tract, the most likely sites being angulated segments of the tract such as the ileocecal or recto-sigmoid area, as well as pathologically obstructed segments [3]. Perforations may have either insidious onset, suggesting a chronic inflammation, or a more alarming one, as an acute abdomen. In rare cases, digestive tract perforations may present as secondary liver abscesses, the first such case being published in 1898 [4].

We present a patient with liver actinomycosis developed in relation to a gastric perforation secondary to accidental foreign body ingestion. The difficult imaging diagnosis was due to the pseudotumoral aspect of the liver lesion, which extensively involved the retroperitoneal area, the stomach and the pancreas.

Key words: foreign bodies ingestion – actinomycosis – liver abscess – imaging techniques – contrast-enhanced ultrasound.
the surrounding liver parenchyma (Fig. 1B). The gastric wall was thickened (9 mm). In the posterior wall of the antrum there was a linear, 20 mm long hyperechoic image, oriented towards the liver hilum (Fig. 2A), protruding from the gastric cavity (Fig. 2B) towards the inferior surface of the liver, blocked by fatty tissue. Non-enhanced abdominal and pelvic CT examination confirmed the linear, spontaneously hyperdense image in the posterior gastric wall, as well as the liver mass. Coronal images revealed the tumor extension towards the retroperitoneal space, infiltrating the hepatic artery, the left gastric artery and the portal vein and deforming and infiltrating the stomach and pancreas. Endoscopic ultrasound confirmed the presence of a mass in the left liver lobe, with the hepatic artery invasion, encasement of the portal vein and celiac and liver hilum adenopathies. The material obtained by endoscopic fine needle aspiration biopsy (EUS – FNA) showed a colony of *Actinomyces*, surrounded by inflammatory infiltrate, mostly composed of white cells (Fig. 3).

A malignant process still could not be excluded given the extension of the retroperitoneal mass, therefore the patient was transferred to the surgery department for diagnostic laparotomy. The initial laparoscopy was converted into conventional laparotomy, and a large liver and retroperitoneal mass was observed, which was situated on the visceral surface of the left lobe, invading the lesser omentum and the body of the pancreas as a firm, irregular block of about 15 cm. Considering the previous imaging vascular findings (infiltration of the hepatic hilum vessels) no attempt to remove the tumor was made. A biopsy was performed from the tumor using a Tru-Cut needle. The morphopathological results showed no malignancy within the specimens. The presence of...
moderate inflammatory infiltrate, consisting of lymphocytes, plasmocytes, neutrophils and eosinophils suggested a chronic liver abscess. The postoperative evolution was favorable, and the patient was put on long-term therapy with broad spectrum antibiotics and antifungotics.

Four weeks later the patient had a significant improvement of the overall status and a weight gain of about 6-7 kilos. Abdominal ultrasonography revealed thickening of the gastric mucosa. The echoic image in the posterior wall of the stomach, still visible, suggested a foreign body or a fistula. The tumor-like mass was no more visible at CEUS (Fig. 4). A final diagnosis of actinomycosis of the liver, stomach and pancreas, secondary to antral perforation by a foreign body (accidentally ingested fish bone?) was established.

**DISCUSSION**

Even though abdominal actinomycosis was described more than 150 years ago, it is still a pathology that is rarely considered by clinicians. The presentation is more often associated with a malignancy than with an infectious process, which is why it has been described as “the most misdiagnosed disease” [5]. There are many species of *Actinomyces* that exist as opportunistic pathogens in the flora of the oropharynx, gastrointestinal tract and female genital tract [6]. An injury of the mucosa must be present in order for these pathogens to invade the deeper structures [7]. The cervico-facial infection is the most frequent manifestation of the disease, the digestive tract being involved in 13-60% of the cases, most often the oral cavity [6]. The stomach, pancreas, small intestine and retroperitoneum are very rarely involved [5]. The liver is affected in 15% of the patients with abdominal actinomycosis and this is considered to be due to dissemination from other sites [8]. The ultrasonographic appearance is that of an ill circumscribed, solid mass. The CEUS identifies the congestion of the liver parenchyma during the arterial and portal phases, which is a valuable indirect sign for the diagnosis of an abscess [9]. The CT aspect is that of an inflammatory liver mass, a secondary liver lesion or a primary liver tumor [10]. The examination is useful for confirming the abscess diagnosis and for revealing the relationship with the neighboring structures. Regardless of the imaging technique, the differential diagnosis of actinomycosis includes mainly malignancies and the final diagnosis is morphopathological. If the clinical diagnosis can be confirmed, surgery is most often not useful [5].

Ultrasonography has its limitations in the detection of foreign bodies that perforate the digestive tract. However, the presence of a linear, echoic image which penetrates the wall of a digestive tract segment and its persistence on subsequent examination consolidates the diagnosis and represents a suggestive and relevant sign. Thickening of the gastric wall and an echoic mass located between the digestive tract and the perigastric structures (in our patient between the stomach and the hilum) suggests an inflammatory process close to the perforation site. Bone structures typically appear on CT as spontaneously hyperdense images surrounded by inflammatory tissue. The accuracy of CT is superior to that of ultrasonography. Maintaining a high degree of suspicion and analyzing every detail on the sectional image is absolutely necessary for an accurate diagnosis [2].

**CONCLUSION**

Imaging techniques (CT, US) may sometimes be misleading because of the non-specific aspect of a liver mass. Using other techniques, such as CEUS may help to demonstrate the inflammatory substrate of the lesion. The detection of foreign bodies or fistulas in the abdomen on the US or CT images should be correlated with the patient’s history and may represent the key to the etiological diagnosis. Imaging investigations are extremely valuable in demonstrating remission under therapy.

**Conflicts of interest:** None to declare.

**REFERENCES**
