
CASE REPORT

Liver Abscess Caused by a Foreign Body: Management by Minimally Invasive Ultrasound-guided Drainage

VWT Chan, WK Wong, SKY Kwok, KW Tang

Department of Radiology and Imaging, Queen Elizabeth Hospital, Jordan, Hong Kong

ABSTRACT

Complications of foreign body ingestion are infrequently encountered in clinical practice. Less than 100 cases of liver abscess formed secondary to foreign body penetration of the stomach have been reported in the English literature. Previous reported cases have been predominantly managed surgically; ultrasound-guided drainage as primary treatment has not been reported. We report the first case of liver abscess caused by foreign body ingestion in Hong Kong managed with ultrasound-guided drainage, without surgical treatment. Although rare, prompt recognition of this condition for early intervention is necessary, as delayed or missed diagnosis may be associated with significant morbidity or death. We also discuss the use of multiplanar reformatting of computed tomography to identify the causative agent, if any, and its exact location in relationship to other anatomical structures. This aids endoscopic removal of the foreign body in a minimally invasive fashion.

Key Words: Drainage; Foreign bodies; Liver abscess; Ultrasonography, Doppler; Wounds, penetrating

中文摘要

由異物引起的肝膿腫：微創超聲引導下的引流

陳煒達、王旺根、郭啓欣、鄧國穎

臨床上很少遇到因吞食異物引致併發症的病例。英文文獻報導因異物穿透胃壁繼發肝膿腫形成的病例不足100例。以往報導病例主要採取手術治療；超聲引導下引流作為首要治療的個案則未有報導。本文報告首例由異物引發肝膿腫並採用超聲引導下引流，而非外科手術為治療方案的香港病例。雖然少見，類似個案應及時診斷以便早期治療，否則延誤或漏診可能引發嚴重疾病甚至死亡。本文也討論了使用電腦斷層掃描的多平面重建功能來確定致病物的存在（如有的話）及其相對於其他解剖結構的確切位置，這有助以微創形式於內窺鏡下異物移除。

INTRODUCTION

Foreign body ingestion is a common cause of clinical consultation in emergency departments. While the foreign body within the oral cavity is visualised and

removed by the clinician in some cases, most of the ingested bodies pass through the gastrointestinal tract without causing any symptoms. However, not all foreign bodies can pass through the gastrointestinal tract

Correspondence: Dr Victor WT Chan, Department of Radiology and Imaging, K1-16, Queen Elizabeth Hospital, 30 Gascoigne Road, Kowloon, Hong Kong.

Tel: (852) 2958 6238; Fax: (852) 2958 6048; Email: cwt735@ha.org.hk

Submitted: 23 Dec 2013; Accepted: 20 May 2014.

with ease, and larger ones may become lodged within the gastrointestinal tract, causing obstruction. Rarely, they may perforate the gastrointestinal tract. Here, we report a case of liver abscess caused by foreign body perforating the gastric antrum.

CASE REPORT

A 75-year-old man presented with fever, tea-coloured urine, and epigastric discomfort in September 2013. Ultrasound (USG) of the abdomen demonstrated a hypoechoic lesion in the left lobe of liver (Figure 1), subsequently confirmed on computed tomography (CT) as an abscess collection. CT also demonstrated a foreign body (Figure 2), suspected to be the causative agent. USG-guided drainage of the abscess was performed. The foreign body was not visualised on radiograph



Figure 1. Ultrasound of the abdomen demonstrates a hypoechoic lesion in the left lobe of liver.

(Figure 3) despite the CT findings.

An abscessogram (Figure 4) performed following drainage of the abscess demonstrated contrast extravasation into the peritoneum, suspected to be the tract caused by the foreign body. Further evaluation by endoscopy did not reveal the entry point in the stomach; hence, endoscopic removal of the foreign body was not feasible. The patient remained asymptomatic and afebrile after abscess drainage and on subsequent follow-up CT at 6-week interval, there was reduction in size of the abscess (Figure 5). The foreign body remained static in size and location. Conservative management with antibiotic treatment was decided for this patient, and the foreign body was not removed.

DISCUSSION

In 1898, Lambert¹ reported the first case of perforation of the gastrointestinal tract by a foreign body, which migrated to the liver and caused an abscess. Since then, an increasing number of cases have been reported worldwide. Santos et al² in 2007 reported a case in which CT failed to identify the foreign body (chicken bone) which was embedded in the liver, and was subsequently identified and removed upon laparotomy. The foreign bodies reported in the literature are usually sharp objects including fish bones, chicken bones, toothpicks, or needles, with fish bone being the most commonly reported foreign body.²

Reviews show that patients may suffer from non-specific symptoms such as abdominal pain, fever and

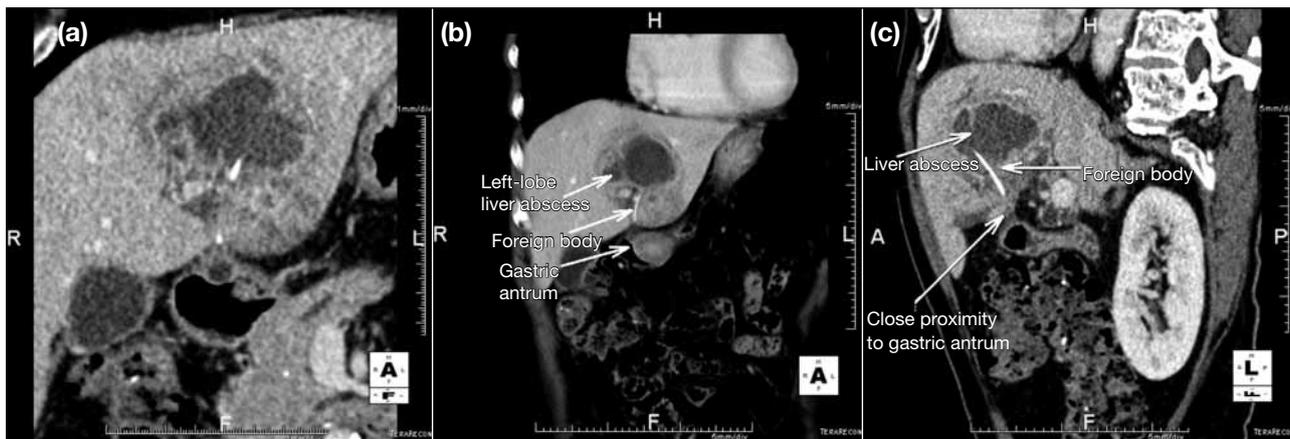


Figure 2. (a) Reconstructed computed tomography (CT) confirms the ultrasound-detected lesion to be an abscess collection. (b and c) Curvilinear hyperdense foreign body is noted. The use of multiplanar reformatting of CT enables demonstration of the foreign body, and its relationship with other anatomical structures. In this case, it is noted to be in close proximity with the gastric antrum.

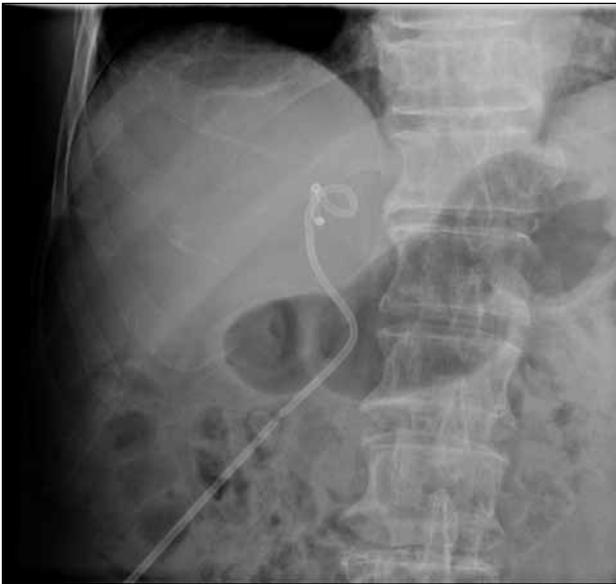


Figure 3. Abdominal radiograph performed after ultrasound-guided drainage. The foreign body is not identified.

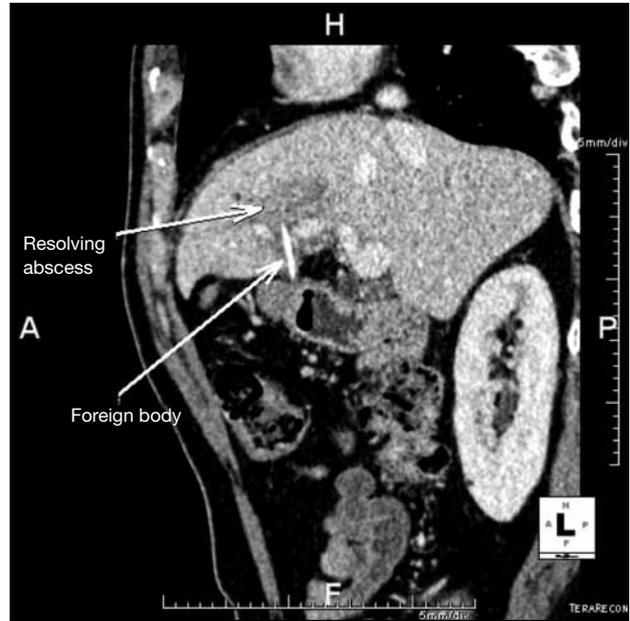


Figure 5. Follow-up computed tomography at 6-week interval shows reduction in size of the abscess. The foreign body remains static in size and location.



Figure 4. Abscessogram: contrast injected via the drainage catheter shows contrast extravasation into the peritoneum, which is suspected to be the tract caused by the foreign body.

vomiting for up to a year³ before the diagnosis is made, and many patients may not recall any history of foreign body ingestion. Leggieri et al⁴ showed that, in migrated foreign bodies causing liver abscesses, most abscesses were solitary (n = 55/60, 91.7%), and predominantly located in the left lobe (n = 35/60, 58.3%), likely due to the close proximity of the left lobe liver to the gastric antrum. Hence, we should have a high index of suspicion of any foreign body in patients presenting with unexplained fever and epigastric pain, particularly in cases with solitary left lobe liver abscess. This is in contrast to haematogenous spread of infection, in which liver abscesses are often multifocal and / or bilateral.

Despite the well-established use of USG and CT for diagnosis of liver abscesses due to their high resolution and accuracy, the direct visualisation rate of the foreign body itself remains low. In 2010, a systematic review by Leggieri et al⁴ reported a sensitivity of only 55% (CT) and 27% (USG) in identifying a foreign body.

In our case, the foreign body was not visualised on transabdominal USG or abdominal radiograph. By using thin-section axial multidetector CT with multiplanar reformatting, we were able to demonstrate the hyperdense curvilinear foreign body impacted within the liver abscess cavity, and its close proximity

to the gastric antrum (Figure 2).

Most reported cases of foreign body–induced liver abscesses are treated surgically.² Recently, Ng et al⁵ reported a case of successful medical treatment of fish bone–induced liver abscess in which interval CT after antibiotic treatment demonstrated interval decrease in size and subsequent resolution of the abscess cavity. In their case report, the impacted fish bone at the pylorus remained unchanged at 28 weeks of follow-up. There was no recurrence of abscess collection and the patient remained asymptomatic at 1.5 years of follow-up.

Percutaneous drainage of the abscess cavity was performed in our patient, and he was started on antibiotics. Follow-up CT performed 6 weeks after the drainage procedure demonstrated an interval reduction in size of the cavity. He remained asymptomatic. The foreign body was visualised on follow-up scan (Figure 4), of which our surgical team decided not to remove.

In conclusion, a diagnosis of foreign body causing liver abscess is difficult to be made clinically, as patients may not recall the history of foreign body ingestion and they may present with non-specific symptoms. We should have a high index of clinical suspicion of any

foreign body as a possible aetiology in patients with unexplained fever and epigastric pain, particularly when a solitary liver abscess is identified in an immunocompetent patient. With the use of multiplanar reformatting on CT, we can diagnose and identify the underlying cause, and plan for better surgical or endoscopic removal of the foreign body should drainage fail. In selected patients, the use of percutaneous USG-guided drainage may avoid the need of laparotomy. This is important as delayed diagnosis may result in a fatal outcome.⁶

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