

An Unusual Cause of Pyogenic Liver Abscess. The Conundrum of Broom Splinter. Report of Two Cases

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Abstract

Pyogenic liver abscess is an uncommon but potentially fatal disease. Very few cases of liver abscess due to foreign bodies have been reported. We report our experience in two patients who were successfully managed for liver abscess due to impaled broom splinter. Broom splinters were swallowed unnoticed during consumption of Jute leaves (*Corchorus olitorus*) (“Ewedu”) soup. Definitive diagnoses in both cases were made at surgery. This is the first case of broom stick-induced liver abscess to be reported in the literature.

Keywords: Abscess, broom, “Ewedu”, liver, pyogenic, surgical

INTRODUCTION

Pyogenic liver abscess may be described as suppurating disease of the liver due to bacterial infection. This potentially fatal disease is relatively rare in clinical practice.^[1] An annual incidence ranging from 0.5% to 0.8% and a frequency of 20 per 100,000 hospital admissions have been reported in the Western population.^[1] Reported local figures on pyogenic liver abscess is scarce.^[2]

Liver abscess may complicate many inflammatory and neoplastic processes of the gastrointestinal and the hepatobiliary systems. These include appendicitis and cholecystitis. Pyogenic liver abscesses from external causes like foreign body is uncommon. Fishbone, dentures, needles and toothpicks have been implicated as foreign body causing pyogenic liver abscess.^[3-5]

In this report we presented two cases of unusual liver abscesses due to impalement of splinters from a bunch of the broom used in the preparation of local jute leaves soup. Both cases were secondary to a fragment of broomstick that was inadvertently swallowed with Jute leaves (*Corchorus olitorus*) (“Ewedu”) soup. The definitive diagnoses were made at Surgery. These two cases may be uncommon in clinical practice; they have the potential of becoming a public health concern in settings where broom is used for preparing “Ewedu” soup.

CASE REPORTS

A 34-year-old female sales representative presented via the accident and emergency with worsening right hypochondrial pain, recurrent vomiting and reduced appetite of three weeks duration. Right hypochondrial pain was a dull ache, constant, radiated to the upper abdomen and relieved by intake of analgesics. She had no other gastrointestinal symptoms and review of system was not contributory.

Examination findings revealed a young woman, in no obvious respiratory or painful distress, afebrile, not pale, anicteric, well hydrated and no pedal oedema. Vital signs showed pulse rate 98 bpm, blood pressure 130/78 mmHg, respiratory rate 20 cpm, temperature 36.7°C.

Abdominal examination revealed marked tenderness in the right hypochondriac and epigastric regions. No palpable abdominal masses. Her full blood count showed neutrophilia, Liver function tests showed raised alkaline phosphatase (131 U/L) and Gamma glutamyl transferase (166 U/L). Viral screening

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How to cite this article: Balogun OS, Jeje EA, Fatuga AL, Atoyebi OA. An unusual cause of pyogenic liver abscess. The conundrum of broom splinter. Report of two cases. *Niger J Med* 2022;31:225-8.

Submitted: 03-Jan-2022

Revised: 21-Feb-2022

Accepted: 22-Feb-2022

Published: 29-Apr-2022

Access this article online

Quick Response Code:



Website:
www.njmonline.org

DOI:
10.4103/NJM.NJM_2_22

for hepatitis B, C and Human immunodeficiency viruses were negative.

Abdominal ultrasound showed an oval shaped heterogeneously hypo-echogenic mass with internal echoes. The mass measured 40.3 mm × 34.5 mm × 28.2 mm and had an increased peripheral vascularity. The mass was located in the segment IVb of the liver adjacent to a thickened (5.6 mm) gall bladder. There was no peri-cholecystic fluid seen. A diagnosis of chronic cholecystitis was made. She was commenced on Intravenous fluids, antibiotics (Ceftriaxone, Metronidazole) and analgesic (paracetamol).

She was prepared for open cholecystectomy and drainage of hepatic abscess. Intraoperatively, we found fibrosed and chronically inflamed gall bladder [Figure 1] embedded in the liver tissue with some peri-cholecystic pus collection. Inferiorly, the gall bladder was attached to a densely adherent stomach, colon and liver. She has a 4 cm long broom stick fragment [Figure 1] in the substance of segment IVb of the liver. She had the broom fragment removed, drainage of hepatic abscess and cholecystectomy.

Postoperatively, immediate recovery was uneventful. However, she was evaluated for recurrent vomiting four weeks' postsurgery. Findings were erosive gastritis and multiple gastric ulcers. Biopsies taken from the ulcers revealed benign findings. In retrospect, patient gave a history of habitual drinking of jute mallow soup at meals.

Case 2

A 57-year-old known hypertensive and diabetic of 19 years who was referred to us with recurrent right-sided abdominal pain of two weeks' duration. Right sided upper abdominal pain was sharp aching intermittent, worsens with inspiration and increased general activities, nonradiating, no known aggravating or relieving factors. He had worsening abdominal distension and difficulty in breathing of 24 h before presentation. There were no other gastrointestinal symptoms and no fever.

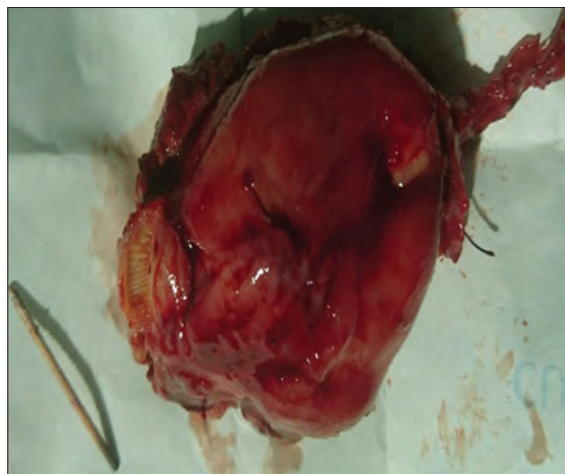


Figure 1: Broom splinter and a cholecystectomy specimen of the first patient

Examination findings revealed a middle aged man in obvious respiratory distress and a respiratory rate of 42 cycles per minute, percent saturation of oxygen in the blood (Spo2) of 60% on room air, he was afebrile, not pale, and anicteric. His pulse rate and blood pressure were 110 bpm and 169/98 mmHg respectively. There were bilateral crackles in the lung bases.

Abdomen was obese, with right hypochondriac tenderness and rebound tenderness. The liver was palpable (10 cm) below the costal margin, Spleen was also palpably enlarged (12 cm) below costal margin). Multiple purpuric spots were noted on both lower limbs. His electrocardiogram showed sinus tachycardia and an evidence of old myocardial infarct.

Computerised tomography (CT) scan showed abscess and gas within the right and left lobes of the liver [Figure 2]. No ascites. A diagnosis of perforated gall bladder with right lobe liver abscess was made. He had emergency cholecystectomy and open surgical drainage of the liver abscess.

Intraoperative findings were: putrid large volume pus involving segments IVa, IVb, V and VIII with thinned-out anterior wall and adherent greater omentum. Adherent pylorus on the under-surface of the liver. The gallbladder was oedematous and contained some sludge. A broken broom fragment seen sticking out from the inferior wall of the abscess cavity was removed [Figure 3a and b].

In the immediate postperiod, he was admitted to the intensive care unit (ICU). He had a prolonged recovery period from sepsis in the ICU and was discharged home in good condition at about four weeks after surgery. In our postoperative discussion, he admitted to his regular consumption of jute leaves soup some days before the onset of his symptoms.

DISCUSSION

Liver abscess is considered rare in clinical practice; it is even rarer to have liver abscess secondary to swallowed foreign



Figure 2: Right liver lobe abscess in the second patient with a piece of foreign body in the Segment IV

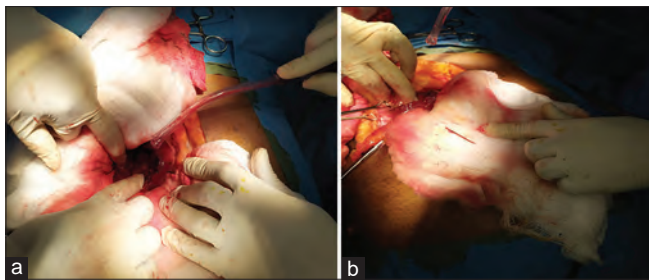


Figure 3: (a) A broom splinter identified in the inferior wall of de-roofed liver abscess, (b) Extracted broom splinter displayed on the gauze piece

body.^[3] To our knowledge this is the first report of liver abscess secondary to a fragment of broomstick in the literature.

Possible mechanisms of foreign body-induced liver abscess include local transmission of microbial organisms on the foreign body or haematogenous spread of bacteria from perforated gut. Microbial organisms may be transported via the portal vein to the liver.^[6] Local transmission may be sequel to foreign-body perforation of anatomical organs close to the liver and eventual penetration of the liver substance.^[7] Abscess develops from seeding of liver substance by microbial flora on the foreign body.

Most ingested foreign bodies are known to pass through the gastrointestinal tract uneventfully within one week.^[8] Foreign body perforations of the gastrointestinal tract occur commonly in the stomach, duodenum, ileo-caecal and recto-sigmoid areas.^[7] Stomach and the duodenum are the most common sites of perforation in patients with foreign body-induced hepatic abscess.^[7] Anatomical structures in close relationship to the liver include the gallbladder, stomach, the duodenum and the splenic and hepatic flexures of the transverse colon. Pathologies involving these locations may be possible sources of liver abscess.

Jute leaves soup popularly called “Ewedu” is a common viscous slimy soup that is widely consumed by the Yorubas in the South West Nigerian. A local way of preparing Ewedu soup is by blending the boiled jute leaves with a local short kitchen broom. Repeated blending of the jute leaves produce a thick slime of liquid soup used in lubricating solid foods for ease of swallowing. “Ewedu” is usually served in large volumes which can be drunk directly because of its sweet taste. Broom splinters may result from fragmentation of broom sticks in the process of preparing “Ewedu soup.” Small broom splinters can be swallowed inadvertently while drinking a thick slime of “Ewedu soup.” Because broom stick comprises mainly cellulose which cannot be digested by man, it acts as a foreign body within the gastrointestinal tract and can cause perforation during gastrointestinal transit. Contrary to some published reports,^[3,7] we could not find any surface evidence of perforation on the contiguous gut structures around the liver at surgery. However, we are of the opinion that perforation of the stomach and eventual penetration of the liver substance could be a plausible mechanism to explain the finding of a broom stick splinter within the wall of the abscess cavity in

the liver. Similar cases have been reported with Fish bones.^[3,7] Thick-walled gallbladder in both cases probably resulted from reactive inflammatory changes in response to the liver abscess.

Abdominal ultrasound and CT scan are excellent radiological imaging for diagnosing liver abscesses.^[9] Pus collections within the liver parenchymal were identified in both cases, however, the presence of foreign body was not reported in the two patients presumably due to the rarity of this condition. Thick-walled gallbladder seen on the images were in keeping with inflammatory gall bladder pathologies.

Treatment approach to the management of liver abscess depends on the aetiology, size, number and site of the abscess within the liver substance as well as the availability of resources and expertise. Medical and image-guided percutaneous approaches may suffice for small pyogenic abscesses. Laparoscopic approaches have been reported.^[3,10] Our patients had open surgical drainage and cholecystectomy. Cholecystectomy was done because of finding of thick-walled gallbladder in the region of the abscess. We were uncertain about the aetiology of the liver abscesses in both cases before surgery. Our diagnosis was made after finding a broken broomstick in the liver at surgery and patients recall of feeding-related events few weeks prior to presentation.

CONCLUSION

Broom fragment should be considered a differential diagnosis in patients presenting with liver abscess due to foreign bodies in areas with high consumption of jute leaves soup. Open surgery for liver abscess is a preferred approach in acutely ill-patients and when the aetiology is not clear preoperatively. Liver abscesses in the two scenarios presented may be said to be uncommon but have the potential of becoming public health issues in settings where broom is used to prepare “Ewedu.” We recommend that the use of broom for blending jute leaves should be discouraged through public enlightenment programs. Electric blender preferably, should be used.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Huang CJ, Pitt HA, Lipsett PA, Osterman FA Jr., Lillemoe KD, Cameron JL, *et al.* Pyogenic hepatic abscess. Changing trends

- over 42 years. *Ann Surg* 1996;223:600-7.
- Balogun B, Olofinlade O, Igetei R, Onyekwere C. Ultrasound-guided percutaneous drainage of liver abscess: 6 years experience in Lagos State university teaching hospital, Lagos. *Niger J Surg Res* 2013;15:13.
 - Bandeira-de-Mello RG, Bondar G, Schneider E, Wiener-Stensmann IC, Gressler JB, Krueh CR. Pyogenic liver abscess secondary to foreign body (fish bone) treated by laparoscopy: A case report. *Ann Hepatol* 2018;17:169-73.
 - Dangoisse C, Laterre PF. Erratum: Tracking the foreign body, a rare cause of hepatic abscess. *BMC Gastroenterol* 2015;15:27.
 - Sim GG, Sheth SK. Retained foreign body causing a liver abscess. *Case Rep Emerg Med* 2019;2019:4259646.
 - Kobborg M, Trap R. Liver abscess following hematogenous transmission due to rectal foreign body perforation. *Case Rep Gastroenterol* 2013;7:277-80.
 - Lee KF, Chu W, Wong SW, Lai PBS. Hepatic abscess secondary to foreign body perforation of the stomach. *Asian J Surg* 2005;28:297-300.
 - Velitchkov NG, Grigorov GI, Losanoff JE, Kjossev KT. Ingested foreign bodies of the gastrointestinal tract: Retrospective analysis of 542 cases. *World J Surg* 1996;20:1001-5.
 - Heneghan HM, Healy NA, Martin ST, Ryan RS, Nolan N, Traynor O, *et al.* Modern management of pyogenic hepatic abscess: A case series and review of the literature. *BMC Res Notes* 2011;4:80.
 - Groeschl R, Baker E, Bertens K, Siddiqui I, Tee M, Helton WS, *et al.* Both laparoscopic and open surgical drainage are highly effective in the treatment of refractory pyogenic liver abscess: A multi-institutional analysis. *HPB* 2016;18:e244.