Case Number 7
Liver Abscess following ingestion of a foreign object

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Case summary:

Demographic details:
Ms. MB, female.
Referred from: home

A 31 year old, previously healthy female presented to A&E on 24/07/2012 with a 2 day history of colicky epigastric pain and spiking fever; however on investigation no pathology was found except for an ovarian cyst of 4cm. It was concluded that it was unlikely that the cyst was causing pain and fever and the patient was discharged. She was given proton pump inhibitors for 2 weeks and pain improved, however on stopping therapy, the pain became much more severe, with radiation to the back. She presented to A&E again on 05/08/2012. A more detailed history elicited the fact that she had ingested half a toothpick by mistake 3 weeks previously. Imaging showed the formation of an abscess between the stomach and liver; which needed drainage.

Presenting complaint:

Epigastric pain: 3 weeks
Low grade fever: 3 days

History of presenting complaint:

The epigastric pain started gradually on 22/07/12 and was colicky in nature with no radiation. The patient was nauseated but did not vomit and pain killers had no effect. The pain was unrelated to food intake, position and breathing and was described as quite severe (6/10). The patient had also been febrile for 3 days. Omeprazole therapy was initiated on 24/07/12, and the pain improved somewhat but persisted. On stopping omeprazole on 01/08/12, the pain worsened to 8/10. The patient presented again to A&E on 05/08/12 complaining of epigastric pain with radiation to the right hypochondrium and back. The pain was colicky in nature and also persisted through the night preventing sleep and associated with severe belching. By this time the patient had become anorexic with chills, rigors and a spiking fever.

Past medical and surgical history:

Past medical history:

Previously healthy. Nil of note.

Past surgical history:

Ovarian cyst (Last seen on CT abdo/pelvis on 24/07/12, unchanged from previous CT scans)
Laparoscopy for ovarian freezing
Liposuction
Tummy tuck
No reported adverse reactions to anaesthesia.

**Drug history:**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage</th>
<th>Frequency</th>
<th>Type</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paracetamol</td>
<td>1g</td>
<td>PRN</td>
<td>Analgesic</td>
<td>Relief for epigastric pain</td>
</tr>
<tr>
<td>Omeprazole</td>
<td>20mg</td>
<td>BD</td>
<td>PPI</td>
<td>Relief of acid reflux</td>
</tr>
</tbody>
</table>

**Family history:**

No family history of specific illnesses

**Social history:**

MB lived with her husband and children. She reported smoking approximately 20 cigarettes daily and drank only socially. There was no history of binge drinking or drug abuse.

**Systemic inquiry:**

First Hospital Event 24/7/12

- General Health: she looked well in general but with the anorexia there was evidence of weight loss over the past 3 weeks. Lethargy, rashes, sleep disturbances
- Cardiovascular System: chest pain, palpitations, SOB, Orthopnea, PND, syncope
- Respiratory System: cough, wheeze, sputum
- Genitourinary System: dysuria, haematuria
- Central Nervous System: headaches, seizures, blurring of vision/visual problems, tinnitus
- Musculoskeletal System: muscle aches, claudication
- Endocrine System: hot/cold intolerance, excessive sweating, tremor

**Discussion of results of general and specific examinations:**

Physical Examination: On presentation her pulse was regular at a rate of 85 beats per minute. The Blood Pressure was 130/70 but she was pyrexial at 100.3°F with her SpO2 98% on air. She was alert, oriented and not jaundice.
Examinations of the cardiovascular and respiratory systems were unremarkable, with the main findings being in the abdomen. Her abdomen was soft but with tenderness in the epigastrium and right hypochondrium with rebound tenderness but no guarding or rigidity (Diagram 1). The rest of the abdominal examination including hernial orifices and rectum were normal.

In view of the history of ovarian cyst she underwent a full gynaecological assessment but this was within normal limits.

**Differential diagnosis:**

- Peptic Ulcer Disease particularly perforated duodenal ulcer
- Acute Cholecystitis
- Pancreatitis
- Appendicitis
- Musculoskeletal pain
- Liver abscess
- Ovarian cyst

**Diagnostic procedures:**

*Laboratory Investigations:*

**Test:** Urinalysis 24/07/12:
**Results:**
- Protein: Trace
- Blood: +++

**Test:** Urine Microscopy 24/07/12:
**Results:**
- Erythrocytes: 150 U/L
- Nitrites: Negative
- White blood cells: Negative

**Test:** Blood tests 24/07/12:
**Justification for test:** To take baseline values and make a diagnosis according to the clinical findings

**Results:**
- CBC: Normal
- Coagulation screen: Normal
- Renal profile: Normal
- Amylase: Normal
- Calcium and phosphate: Normal

*Imaging Investigations:*

**Test:** Abdominal X-Ray 24/07/12
**Justification for test:** Basic investigation and to identify possible pathology:
**Result/Conclusion:** No abnormality detected

**Test:** Chest X-Ray 24/07/12:
**Justification for test:** Basic investigation and to identify possible pathology
**Result/Conclusion:** No abnormality detected

**Test:** Ultrasound abdomen 24/07/12
**Justification for test:** To diagnose or rule out abdominal pathologies
Result: Avascular area adjacent to liver; may represent a distended gastric antrum. Mildly distended gallbladder (common bile duct not seen).

Test: CT abdomen & pelvis 24/07/12:
Justification for test: To identify abdominal or pelvic abnormalities.
Result: No pulmonary lesion is seen in the lung bases. No free gas, abscess or signs of bowel obstruction are seen. The pancreas, liver, gall bladder, spleen, both adrenals, kidneys and urinary bladder are normal. The abdominal and retroperitoneal lymph nodes are not enlarged. No ascites is present. There is a 4cm cystic formation in left ovary.
Conclusion: All findings normal except 4cm cystic lesion in the left ovary.

Second Hospital Event 5/8/12

Test: Ultrasound Abdomen & Pelvis: Day 1:
Justification for test: Reassessment of patient on her second admission.
Result: Difficult examination due to patient habitus and abundant bowel gas in the upper abdomen. The liver is normal in size and echotexture. An ill-defined hypoechoic avascular area is seen adjacent to the liver in the vicinity of the stomach. No intra- or extrahepatic bile duct dilatation is seen. Normal flow is seen in the portal vein. The gall bladder is mildly distended (4.5cm width) but no stones or signs of inflammation are seen. The common bile duct could not be visualized due to abundant bowel gas. Both kidneys are normal in size, shape and parenchymal thickness. No stones or hydronephrosis are seen. The right kidney measures 12.5cm and the left kidney measures 12.1cm (interpolar dimensions). The urinary bladder is unremarkable. The spleen has a normal echotexture and size. No free fluid is seen in the abdomen and pelvis.
Conclusion: An ill-defined hypoechoic avascular area is seen adjacent to the liver in the vicinity of the stomach. This may represent a distended gastric antrum. Mildly distended gall bladder.

**Therapy:**

**Drugs:**

<table>
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<tbody>
<tr>
<td>Hartmann’s solution</td>
<td>1L</td>
<td>8 hourly</td>
<td>Rehydration IV solution</td>
<td>To ensure good hydration</td>
</tr>
<tr>
<td>Cefuroxime</td>
<td>750mg</td>
<td>TDS</td>
<td>IV antibiotics</td>
<td>To clear possible infective agent</td>
</tr>
<tr>
<td>Ranitidine</td>
<td>50mg</td>
<td>TDS</td>
<td>Histamine receptor antagonist</td>
<td>Inhibits acid production in the stomach</td>
</tr>
<tr>
<td>Maalox</td>
<td>20ml</td>
<td>TDS</td>
<td>Antacid</td>
<td>Neutralises acid in stomach</td>
</tr>
<tr>
<td>Clexane</td>
<td>40mg</td>
<td>DLY</td>
<td>Anticoagulant</td>
<td>Thromboprophylaxis in a high risk patient (smoker, relatively immobile)</td>
</tr>
</tbody>
</table>

**Management:**

Day 2: The patient improved with analgesia but still had chills and rigors even though she was tolerating a light diet.

Physical Examination: Pulse 80 bpm
BP: 125/70
Temperature: 99.3°F
SpO2 on air: 99%
She was haemodynamically stable, alert, oriented and not jaundiced.
Abdomen: Tenderness epigastrium and right hypochondrium, with soft abdomen and no guarding.

Day 3: CT Abdomen & Pelvis: The lung bases are clear. The spleen, pancreas, adrenals and kidneys are normal. There is a large ill-defined hypodense lesion in the left liver lobe measuring about 56 x 42mm. No enlarged nodes, free air, or free fluid are seen. The uterus and uterine bladder are normal. There is complex left ovarian mass measuring 36mm due to probably dermoid. Impression: Liver abscess that requires drainage.

Image 1: Abscess visible within left lobe of liver

Image 2: Abscess visible within left lobe of liver

Operation: Day 3:
CT guided cyst drainage

Procedure:
- Drainage and insertion of pigtail catheter into liver abscess under CT control
- 10F catheter inserted
- 30ml of pus aspirated

Image 3: Drainage under CT control
Patient stable post-procedure. Analgesia PRN. Gentamycin given, calculated according to patients weight (355mg 8 hourly).

Day 4: Following this procedure the patient became afebrile for the first time. She remained well with no further complications until discharge. As at this stage the diagnosis was still obscure so a further CT scan was scheduled for day 7 to try to identify the cause of the perforation that led to the subhepatic and hepatic abscess. The investigation however confirmed the presence of a resolving abscess with a drain within but no other foreign bodies were visible. A follow-up CT scan, taken 19 days post-procedure showed that the abscess was healing well. The image is shown below (Image 4).

![Image 4: Healing abscess with drain within](image)

In view of the fact that the patient had been previously perfectly healthy and the history of inadvertent ingestion of half a toothpick 3 weeks previously there was little doubt that the sequence of events was of perforation of the lesser curvature of the stomach with the ingested toothpick and subsequent subhepatic and intrahepatic abscess formation.

**Diagnosis:**

This is a case of liver abscess following accidental ingestion of a foreign body, namely half a toothpick. Unintentional ingestion of foreign bodies is common in daily life. Ingested foreign bodies pass through the gastro-intestinal system undiscovered within a week in approximately 80-90% of cases\(^1\)\(^-\)\(^3\). In the remainder of cases, obstruction is the likeliest cause of symptoms\(^1\)\(^-\)\(^2\).

Perforation is a rare finding in 1% of cases. The areas which are commonly affected are the ileocecal region, the rectosigmoid region and the duodenum\(^2\)\(^-\)\(^5\). Development of a hepatic abscess is even rarer. Between the first reported case in 1898 and 2007 only 47 cases were reported globally\(^6\). The commonest sites of perforation of the gut are the stomach and duodenum\(^5\).

Establishing the diagnosis is difficult as the patients may be unaware of their ingestion and presentation is often late as the migrating foreign body can remain silent until an abscess has formed\(^1\)\(^-\)\(^3\)\(^,\)\(^4\). Symptoms are usually non specific, with abdominal pain, fever, nausea and vomiting, anorexia and weight loss. Furthermore, the classical presentation of hepatic abscess (i.e. fever, abdominal pain and jaundice) is
only present in a few cases\textsuperscript{5-7}. In 1955, Griffiths described a case of septic shock and subsequent death following the ingestion of a needle. So far, only two cases of death were reported, both by Griffiths\textsuperscript{8}. Laboratory findings are also non specific and identification on plain radiography is not possible unless the foreign body is radio-opaque\textsuperscript{3,4}. CT scan is preferred technique for the diagnosis due to its high resolution and accuracy. The second best option is an abdominal ultrasound\textsuperscript{1}. In the vast majority of such cases treatment includes drainage and antibiotic therapy and does not require more extensive surgical procedures\textsuperscript{3}.

A literature review by Santos et al found that fish bones were the most common foreign body and the stomach was the principal site of perforation\textsuperscript{11}. Abscess formation occurs more commonly on the left lobe. Isolated microorganisms on abscess or fluid cultures are usually part of the normal flora of human oropharynx. Prognosis depends on a rapid diagnosis\textsuperscript{6,9-11}.

From a total of 47 reported cases of abscess formation secondary to ingestion of a foreign object, 12 cases (25.5%) were due to toothpick ingestion. Of these 12 cases there was only one mortality. 58% of these cases reported a perforation through the stomach, 33% reported a perforation through the duodenum whilst in 9% the perforation was through the colon. The left lobe was the most commonly affected lobe (66%). Presenting complaints included epigastralgia, fever, vomiting and shock. Management involved removal of the toothpick with abscess drainage in all cases except one. This patient refused surgery and was consequently treated with antibiotics\textsuperscript{11}.

**Final treatment and follow ups:**

Following CT drainage of the abscess, the patient made a rapid and unremarkable recovery with the post-procedure CT confirming resolution of the abscess. The patient was discharged on day 8 post-admission with lifestyle advice regarding smoking cessation, reduction of coffee intake and to eat small frequent fat free meals and to pay more attention while eating.
**Fact Box 7:**

**Title:** Liver Abscess

**Short description of condition:**

A liver abscess is a pus-filled cavity within the liver which is normally caused by a biliary tract source but can also be due to other intra-abdominal processes, including diverticulitis, and hematogenous spread. In this case hepatic abscess occurred following perforation of the gastrointestinal tract caused by ingested foreign body.

**Risk factors:** Inflammatory bowel disease, especially Crohn’s disease, due to loss of integrity of the mucosal barrier

- Liver cirrhosis
- Hepatic transplant
- Hepatic artery embolization
- Institutionalization
- Immunocompromise / Immunodeficiency syndromes
- Older age (particularly associated with biliary sepsis)
- Malnutrition, malignancy, pregnancy, steroid use, and excessive alcohol intake

**Symptoms:**

- Chills and rigors
- Right upper quadrant pain
- Anorexia
- Malaise
- Referred pain to the right shoulder is also possible
- Irritation of the diaphragm may also cause cough or hiccoughs however this is unlikely

**Signs:**

- Fever (either continuous or spiking)
- Right upper quadrant tenderness
- Hepatomegaly
- A mass may be palpable
- One forth of cases may present with jaundice and this is usually associated with biliary tract disease or the presence of multiple abscesses
- A pleural or hepatic friction rub are uncommon but may be associated with diaphragmatic irritation or inflammation of Glisson capsule

**Prevention:**

- Prompt treatment of biliary, gastrointestinal, pelvic, and systemic infections that may spread to the liver
- Minimize alcohol intake to maintain hepatic cellular integrity

**Prognosis:** Liver abscess is almost uniformly fatal if left untreated. Timely treatment, which includes drainage and antibiotics reduces mortality to approximately 5%.
References:

Case Report:


Fact Box: