Poly-Microbial Sepsis: To Think Outside the Box

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PATIENT DESCRIPTION

A 70-year-old male arrived at the emergency department (ED) with symptoms of fever, shivering, and sweating for 3 days. A dry cough started a week before admission. There were no other referring symptoms. The patient, a farmer by occupation, denied any animal bite or exposure, travel abroad, consumption of uncooked meat, or drink of unpasteurized milk products. In the ED, his vital signs showed hypotension with blood pressure of 70/40 mmHg, pyrexia of 39.4°C, and tachycardia of 100 beats per minute. On physical examination, the patient shivered. On auscultation, fast heart sounds were heard.

Blood tests revealed lymphopenia of 0.460 K/microl (normal range 1–4.8), elevated liver enzymes: aspartate aminotransferase 144 U/L, alanine transaminase 109 U/L, gamma-glutamyl transferase 170 U/L, alkaline phosphatase 171 U/L (normal ranges 7–37U/L, 0–40U/L, 7–49 U/L, and 30–120 U/L, respectively). Total bilirubin was normal. C-reactive protein was elevated to 25 mg/dl (normal range 0–0.5 mg/dl). A coronavirus disease 2019 (COVID-19) polymerase chain reaction test was negative. Urinalysis was normal and blood cultures were drawn. Chest X-ray and abdominal sonography were normal.

A suggestive working diagnosis of septicemia of unknown origin was made. Consequently, oral doxycycline and intravenous cefuroxime were initiated.

Multiple blood cultures yielded poly-microbial bacteria including *Sterptococcus anginosus*, *Sterptococcus constellatus*, *Peptostreptococcus micros*, and *Actinomyces odontolyticus*. Transesophageal echocardiogram (TEE) examination showed no valve vegetations.

A chest, abdomen, and pelvic computed tomography (CT) scan demonstrated an infarction of the spleen, portal vein thrombosis, and hypodensity in the medial part of the head and neck of pancreas, suspected to be a space occupying lesion [Figure 1A].

On revision of the CT scan, a fistula between the pancreatic mass and the lesser curvature of the stomach was suspected, therefore gastroscopy was planned [Figure 1B].

On gastroscopy, a foreign body was observed protruding from the lesser curvature, penetrating to the greater curvature. On inspection, it looked like a wooden skewer [Figure 1C]. Attempts to grasp the skewer with biopsy forceps or a grasper failed. An endoscopic retrograde cholangiopancreatography (ERCP) guidewire was passed over the skewer and back below the skewer [Figure 1D]. The guidewire was caught with a grasper so both of its ends came through the working channel of the gastroscope and mounted on a Soehendra device by Cook Medical (Indiana, USA). Usually, a Soehendra device is used to brake big and hard common bile duct stones with a basket. The Soehendra device handle was screwed down and the ends of the guidewire pulled, which resulted in breaking the skewer into two pieces. Each end of the broken skewer was caught with a grasper and pulled out of the stomach [Figure 1E, Figure 1F]. Two small holes were detected on both curvatures on the site where the ends of the skewer were stuck. They were closed with metal clips.

Following this successful endoscopy, the patient improved and was discharged home to complete an antibiotic treatment course and oral anticoagulant therapy. The patient was followed for a few months without recurrence of any infection.

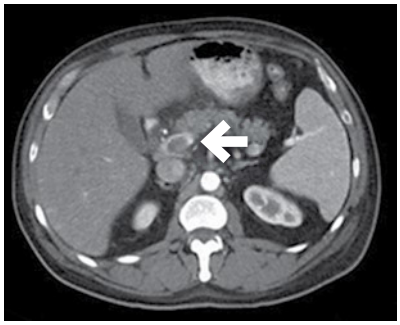
COMMENT

We presented a patient with symptoms of septic shock whose blood cultures yielded polymicrobial bacteria of upper gastrointestinal origin and mouth flora resulting from a foreign body ingestion, which caused a perforation of the stomach with severe intra-abdominal sepsis. Foreign body ingestion is a common entity in real-life clinical practice. In childhood, most cases of upper airway obstruction are due to food, but there are some cases of obstruction due to toys and magnets [1]. In adults, the most common foreign bodies ingested are food impactions, fish bones, wood, and plastic [2]. Foreign body ingestion can lead to different hazardous outcomes such as sepsis, perforation of gastrointestinal system, formation of fistula, and even death. Most of the foreign bodies move freely out of the body, whereas 10–20% will be removed using invasive devices. In a recent study based on different case reports, when patients who ingested foreign bodies required surgery, the mortality rate was 10% [3].

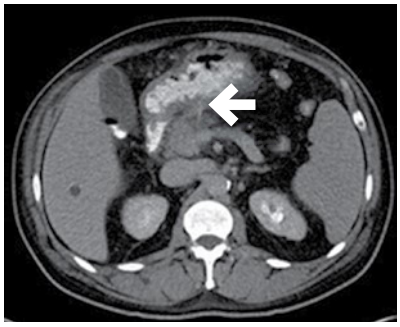
Another important aspect of our case is the presence of pylephlebitis, defined as a septic thromboembolism of the portal vein. Pylephlebitis formation started from a small thrombophlebitis formed in the vessels draining the main organs of the gastrointestinal tract. Later complications of this small thrombophlebitis result

Figure 1. Images of foreign body ingestion

CT = computed tomography, ERCP = endoscopic retrograde cholangiopancreatography



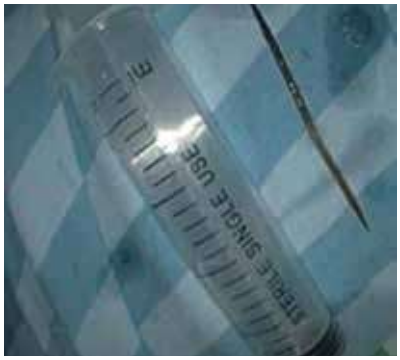
[A] CT of portal vein thrombosis (white arrow)



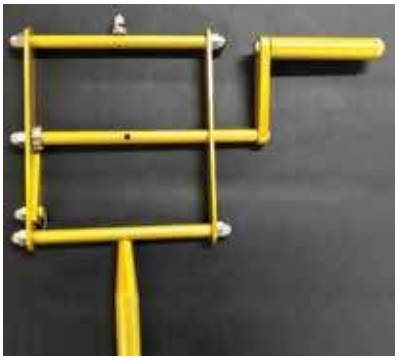
[B] CT of the foreign body (thin white line) and the developing fistula (white arrow)

[C] Gastroscopy showing foreign body in the antrum

[D] Gastroscopy showing ERCP guidewire over the skewer



[E] The skewer outside the body (20 cc syringe)



[F] The Sohendra device

in abdominal infection, mainly appendicitis and the transformation to pylephlebitis in the portal and/or splenic veins. Main complications of pylephlebitis are liver abscesses, bowel ischemia, and portal hypertension. Currently, mortality is up to 30%.

In our case, the leading clue to the diagnosis of pylephlebitis was the polymicrobial bacteremia due to the foreign body ingestion with streptococcus bacteria. Main symptoms were fever and generalized weakness. Abdominal pain, vomiting, and jaundice are also common features of pylephlebitis, but were not noticed in our patient. Common laboratory parameters are leukocytosis and elevated liver function tests [4]. In addition to antibiotic treatment, there is a debate about anticoagulant treatment of pylephlebitis. Due to the extensive nature of thrombosis in the main portal trunk propagating to the splenic vein, anticoagulation was advised especially considering evidence of improving resolution of thrombosis in a recent study [5].

CONCLUSIONS

We described severe complications of sepsis and pylephlebitis caused by an ingested foreign object. A unique endoscopic gastroscopy succeeded in removing the foreign body located in a problematic stomach position. In patients who arrive at the ED and are later admitted with a diagnosis of sepsis and polymicrobial bacteremia, pylephlebitis should be taken into consideration and appropriate management started avoiding further insults.

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