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Case Report

Toothpick meningitis

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ABSTRACT

A 66-year-old male with a history of hypertension, back pain, diverticulosis and anal fistula presents with acute onset syncopal episodes, worsening back pain, and altered mental status. The patient exhibited considerable leukocytosis but was hemodynamically stable. CT imaging of the head revealed a gas pattern in the posterior fossa and velum interpositum. CT imaging of the abdomen and pelvis revealed a needle-like foreign body traversing the left sacrum to the sigmoid colon. A lumbar puncture revealed meningitis. Flexible sigmoidoscopies were performed without successful visualization of the foreign body. An explorative laparoscopy was successfully performed, enabling retrieval of what was determined to be a wooden toothpick. The patient remained hemodynamically stable with persistent altered mental status and was eventually discharged after completion of antibiotics on day 47 of hospitalization. This case illustrates a rare complication of ingesting a sharp foreign body that was identified by CT of the brain and abdomen/pelvis with successful surgical repair.

Case report

A 66-year-old African American male with a past medical history of hypertension, long-term lumbar back pain, diverticulosis, and long-term anocutaneous fistula without the diagnosis of Crohn disease presented to the emergency department, with new onset syncopal episodes and altered mental status. His family reported a recent history of nausea, vomiting, dizziness, shortness of breath, anorexia, and worsening foul odor from his anal fistula. In addition, he reported worsening left lower quadrant pain for 3 weeks and worsening lower back pain for 3 days. The patient denied fever, palpitations, chest pain, urinary symptoms, or bloody stools. A colonoscopy 4 years prior was significant only for benign polyps and moderate diverticulosis. The patient was found to be notably underweight and distressed, with diffuse abdominal tenderness and a draining rectal fistula. Complete blood count revealed a markedly elevated leukocyte count with bandemia in an otherwise benign workup. A subsequent noncontrast computed tomography (CT) of the abdomen and pelvis was performed, revealing a 5 cm long needle-shaped foreign body traversing from the sigmoid colon into the left sacrum with associated heterogeneous hypodensity and subarachnoid air organizing within the sacral central canal (Figs. 1-3A and B). There was no evidence of induration or disruption of the skin overlying the sacrum to suggest a

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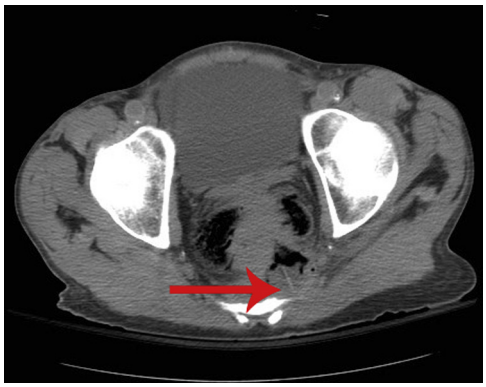

Fig. 1 – Axial non-contrast computed tomography (CT) demonstrates linear intraluminal foreign body in the rectosigmoid colon (arrow).

nonhealing decubitus ulcer. A noncontrast CT of the head was performed, revealing a new intracranial small volume gas pattern in the posterior fossa and velum interpositum (Fig. 4). There was also acute mild hydrocephalus of the lateral ventricles (Fig. 5). Contrast studies were contraindicated secondary to contrast allergy.

After blood cultures were collected, the patient was given analgesics and started on empiric antibiotics. A lumbar puncture revealed cloudy cerebral spinal fluid (CSF) with profound leukocytosis, very low glucose level of 9 mg/dL, and cytospin of the CSF revealed abundant cocci and rod bacteria. Subsequent culturing of the CSF sample revealed growth of *Escherichia coli* susceptible to imipenem and fluoroquinolones. The patient was placed on wide spectrum antibiotics for meningitis with additional coverage for enteric bacteria. In the following days, 2 flexible sigmoidoscopies were performed that were unable to visualize the foreign body because of poor bowel prep. Laparoscopic-assisted low anterior resection was performed with a left descending end colostomy because of colonic perforation. During the operation, a small wooden foreign body consistent with a toothpick protruding through the colonic mucosa was removed from the rectosigmoid colon before the low anterior resection was carried out.

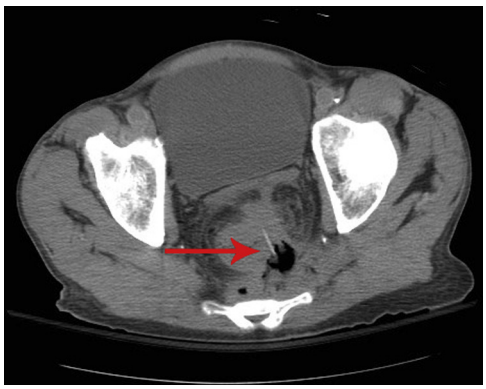

Fig. 2 – Axial non-contrast CT demonstrates linear intraluminal foreign body in the rectosigmoid colon (arrow).

Because of refractory ventriculomegaly from the sequela of meningitis and interval development of transependymal flow, a ventriculoperitoneal shunt was later placed (Figs. 6 and 7). After a prolonged arduous clinical course, the patient was discharged on the day 47 of admission.

Discussion

By nature of their shape, it is obvious that swallowed sharp objects are the culprits in the development of many aberrant fistula tracts through localized perforation of the gastrointestinal tract. Only one reported incidence of meningitis caused by a foreign body in the gastrointestinal tract has been reported [1].

Foreign body fistulization has been documented to most commonly occur between blood vessels and solid organs. There has been documentation of formation of an aortoesophageal fistula with resultant aortic pseudoaneurysm development from a swallowed fish bone [2]. Because the left atrium comes into close proximity with the esophagus, there also have been reports of cardiac tamponade from localized perforation of the esophagus into the pericardial sac [3]. Moreover, an arterial-enteric fistula can also manifest anywhere along the trajectory of the aorta depending on where the site of perforation from the enteric tract occurs, even an arterial-enteric communication between the small bowel and common iliac artery has been reported [4]. Populated by innumerable flora, the gastrointestinal tract is always a looming source of sepsis when the bacteria escape the confines through the site of perforation. Mediastinitis, peritonitis, and in this case, even meningitis can conceivably ensue from through this medium. Furthermore, perforation in close vicinity to the liver has resulted in pyogenic liver abscesses and those in the inner pelvis can result in vesicoenteric fistulas [5,6].

Diagnosis of ingested foreign bodies warrants high clinical suspicion. Unless the foreign body is metallic, radiography has low sensitivity of detecting these objects. Notable risk factors include male gender, those with dental prostheses, habitual chewing of toothpicks, consuming foods that come with toothpicks such as notorious club sandwiches, especially while inebriated, and in patients with decreased mental functioning including those with psychiatric illnesses and those with developmental delay [7]. Patients who present with long-term, recurrent gastrointestinal pain should also raise suspicion for an ingested foreign body [8].

Once a sharp object is ingested, endoscopy is the best way for initial attempt at retrieval to avoid migration further down into the gastrointestinal tract. If gastroscopy is not able to detect the object or if it is been longer than 24 hours, then ultrasound can be used to aid in detection. If the object is in the small intestine then the diagnostic laparoscopy should be performed. In cases where ultrasound is cannot localize the object, the patient should be admitted to monitor for clinical deterioration [9]. Radiographic surveys of the abdomen with abdominal radiographs prove to be low on