Inadvertent Ingestion of Wire Bristles From a Grill Cleaning Brush: Radiologic Detection of Unsuspected Foreign Bodies

OBJECTIVE. We report acute onset of either odynophagia or abdominal pain immediately after ingestion of grilled meat in six patients presenting between May 1, 2009, and November 18, 2010. In all six patients, radiologic studies revealed a linear metallic foreign body. Careful history revealed cleaning of the grill with a metallic brush immediately before cooking in all six cases.

CONCLUSION. Physicians should be aware of this potential hazard to facilitate accurate and timely diagnosis.

Foreign body ingestion is a common cause for emergency department visits, usually in the pediatric population. In 1999, the American Association of Poison Control documented 182,105 incidents of foreign body ingestion by patients younger than 20 years [1]. Serious morbidity occurs in less than 1% of all cases [2]. Up to 90% of foreign bodies that have traveled beyond the esophagus will pass spontaneously; however, endoscopic removal is recommended for sharp or large objects that are within reach of the endoscope [3]. Sharp foreign bodies within the esophagus are endoscopically removed, whereas blunt objects may be advanced into the stomach.

The literature on foreign body ingestion in adults is scant, consisting mainly of case reports. Objects described include a comb [4], a table knife [5], and a toothpick [6], with reported complications including obstruction, perforation, and gastrointestinal bleeding.

To our knowledge, there are two case reports in the literature describing upper gastrointestinal tract injury secondary to ingestion of a wire bristle from a grill cleaning brush. In each case, the patients reported sudden onset of pain after eating meat cooked on a recently cleaned grill. Ingestion led to perforation and abscess formation in both cases, one of which was sublingual and the other was paraesophageal in location [7, 8].

Clinical History and Presentation

Over the course of 18 months, six patients presented to our emergency department complaining of acute onset of either odynophagia or abdominal pain after ingestion of grilled meat. Careful history revealed that in all cases the patients had eaten meat cooked on a grill that was cleaned with a wire brush immediately before cooking. Patients included five female and one male subject ranging in age from 11 to 75 years. All patients presented to the emergency department within 24 hours of ingestion (range, 2–24 hours).

Three patients presented with acute odynophagia as a primary symptom. Two underwent radiography of the neck only, which revealed a metallic foreign body, and one patient proceeded directly to CT, which identified and localized the foreign body within the neck (Fig. 1).

Both patients with radiographic evidence of foreign body within the neck underwent immediate laryngoscopy. In the first patient, the wire was easily visualized and removed. In the second patient, the wire was not immediately visualized because of extensive surrounding soft-tissue edema, and the procedure was abandoned. Laryngoscopy was repeated 6 days later, and the wire was identified and removed. In the patient who underwent neck CT, the wire was suspected to have perforated into the tonsils, and tonsillectomy was performed. Pathologic analysis did not reveal a foreign body, and the patient remained symptomatic. The wire was then identified under direct visualization 2 weeks later and was removed without complication.

Three patients presented with abdominal pain as their dominant symptom and underwent CT of the abdomen and pelvis in the emergency department. In two patients, the foreign body...
was visualized perforating the wall of the jejunum (Fig. 2). In the third patient, the wire perforated through the stomach into the liver and was surrounded by a large hepatic abscess (Fig. 3).

Laparoscopy was immediately performed on the basis of CT and clinical findings in the two patients with proximal small-bowel perforation, and the foreign body was easily identified and removed. Length of stay for these patients ranged from 1 to 4 days. The patient in whom the wire was identified within the liver on CT underwent laparotomy and anatomic partial hepatectomy to remove the hepatic abscess. The wire was not identified at pathologic analysis, but we suspect this was because of a sampling error in pathologic analysis (i.e., a specimen radiograph was not obtained). The patient was discharged after 6 days.

Discussion

Although foreign body ingestion is not a rare complaint in the emergency department, it is striking that in only 18 months we identified six separate episodes of wire bristle ingestion after eating grilled meat. All patients presented within 24 hours of ingestion. The severity of the ingestion ranged from odynophagia, with subsequent endoscopic removal,
to gastrointestinal perforation and hepatic abscess formation. In patients presenting with odynophagia, radiography of the neck may successfully identify the wire bristle, which will be significantly denser than the more commonly encountered fish bone. When a foreign body is identified within the neck, CT may be helpful for anatomic localization and procedural planning.

CT scan without oral contrast agent is recommended for patients presenting predominantly with abdominal pain. We do not routinely administer oral contrast agent in the emergency department; however, it should specifically be avoided when there is suspicion of foreign body, because hyperattenuating oral contrast agent can potentially obscure a radiopaque foreign body. This clinical scenario needs to be considered by physicians whenever patients present with acute pain after ingestion of grilled food.

Fig. 2—45-year-old woman with acute onset of abdominal pain after eating grilled chicken. A, Axial contiguous CT images show linear foreign body (arrows) perforating wall of proximal small intestine. B, Coronal reformatted image nicely localizes foreign body (arrow). C, Wire bristle was retrieved at laparoscopy.

Fig. 3—75-year-old woman with acute onset of abdominal pain after eating grilled steak. A and B, Coronal reformatted images show metallic foreign body (arrows) perforating into liver with surrounding hepatic abscess. C, Axial CT image shows tip of foreign body (arrow) within hepatic abscess.
Accidental Ingestion of Wire Brush Bristle

References

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