MANAGEMENT OF WIRE BRUSH BRISTLE INGESTION, REVIEW OF LITERATURE AND PRESENTATION OF AN ALGORITHM

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ABSTRACT

Objectives: To increase awareness of wire brush bristle ingestion, review the literature relating to wire brush bristle ingestion, and describe a management algorithm for wire brush bristle foreign bodies, as well as a technique for bedside removal.

Methods: The authors present a case of an accidental wire bristle ingestion that was successfully treated with bedside removal, and describe a successful bedside technique for removal. For the literature review, the PubMed journal database was queried using the search terms “wire bristle”, “wire brush”, and “grill bristle”.

Results: 27 wire brush ingestions were identified in the medical literature since 2005. Bedside visualization was attempted in ten patients and successful in four. The foreign body was able to be removed at the bedside in three of these patients. Two patients were managed conservatively. The authors developed a management algorithm based on these literature findings.

Conclusion: Wire brush bristle ingestion is increasingly common in the literature and a definitive algorithm does not exist for management. The authors present a management algorithm for bedside removal of wire brush foreign bodies and describe a technique for successful removal at the bedside.

INTRODUCTION

In recent literature and media, there has been increasing reported incidence of wire brush foreign body ingestion. Of the 27 cases reported in the medical literature since 2005, 25 were published in the past two years. Presenting symptoms ranged from mild dysphagia to small bowel perforation. Treatment has ranged from conservative management to surgical exploration. Given the non-specific symptoms and difficult visualization, the diagnosis of ingested wire brush foreign body may be delayed due to lack of suspicion or adequate work-up. At least 15% of the patients had a mistaken diagnosis or negative initial evaluation before their diagnosis of wire brush foreign body was made. Fifty percent of the endoscopic examinations and 20% of the radiographic films were negative during work up. Computed tomographic (CT) scan was the most frequently used modality to confirm the diagnosis. Only 70% of these wire brush foreign bodies have been found in the neck or upper aerodigestive tract, while the remainder migrated deeper into the alimentary tract.

There are no established guidelines specific to the management of wire brush foreign body ingestion. Guidelines for foreign bodies ingestion in the upper aerodigestive tract generally include initial evaluation with radiograph films followed by attempting endoscopic removal. However, only one paper in 2012 described bedside endoscopic removal, which was attempted and successful in three patients.

In this paper, we describe a case of accidental ingestion of a wire bristle that was managed in the outpatient setting, and an overview of the current literature.

CASE REPORT

A 59 year old woman was referred to an outpatient Otolaryngology clinic with a several month history of left sided globus sensation associated with intermittent dysphagia and odynophagia. Her symptoms had started after an episode of choking on chicken at a barbecue and she was concerned that there was a chicken bone lodged in her throat. Physical exam including flexible laryngoscopy was unremarkable. Due to her persistent symptoms, she underwent transnasal esophagoscopy which was similarly negative. Subsequent computed tomographic (CT) scan revealed the presence of a radio-opaque lesion in the left oropharynx [Figure 1]. Repeat physical examination with fiberoptic laryngoscopy directed by CT findings revealed a small metallic grill bristle embedded within the patient’s left inferior tonsil pole [Figure 2].

After identifying the location of the foreign body by laryngoscopy, the patient’s oropharynx was anesthetized with benzocaine (Hurricane®) spray. Under direct visualization, the oropharynx was exposed and the metal wire bristle was grasped with kelly forceps and removed in its entirety transorally [see Figure 3 for instruments].

Figure 1: Axial (top) and sagittal (bottom) views, CT scan of patient with presence of radio-opaque lesion in left oropharynx.

Figure 2: Metallic grill bristle-embedded within the patient’s left inferior tonsil pole.

Figure 3: Instruments used in bedside removal were a fiberoptic laryngoscope, Kelly forceps, and benzocaine (Hurricane®) spray.

DISCUSSION

Diagnosis of wire bristle foreign body is challenging due to often poor visualization and non-specific symptoms. Thus, for patients with persistent globus sensation, dysphagia, or odynophagia, and negative physical exam, it is important to maintain a high index of suspicion for wire brush foreign body including inquiry to whether the patient ingested grilled meat. In the case we have described, the patient’s diagnosis was established with CT scan after negative fiberoptic laryngoscopy and transnasal esophagoscopy. It was previously reported that patients presenting with symptoms of a retained ingested foreign body are most cost-effectively managed with CT scan as the initial diagnostic test. This seems to hold true for patients with wire brush foreign body ingestion. On review of the literature, CT scan was able to identify the wire bristle foreign body in all 19 of the patients the modality was used, including in four patients who had negative X-ray findings. Thus, while radiography may successfully identify the wire bristle, CT examination seems more reliably sensitive. The authors present an algorithm for management of wire brush bristles based on our experience and the previously published literature (Algorithm 1).

CONCLUSIONS

The accidental ingestion of wire brush bristles continues to be a public health issue because of the difficulty in diagnosis and unclear management algorithm. Initial diagnosis should be focused on history and physical examination with the addition of flexible laryngoscopy when possible. CT examination is important for patients with high suspicion for a wire brush foreign body ingestion and negative examination. Outpatient management may be safe and effective, depending on the location of the wire brush foreign body.

REFERENCES


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