

Unusual Foreign Body in Aerodigestive Tract- a Difficult Diagnosis during a Pandemic

Rajesh Radhakrishna Havaladar¹, Mudhol RS², Priti.S.Hajare², Padmavathy O^{*1}, Adarsh D Kumar¹

¹Department of ENT and Head & Neck Surgery, Jawaharlal Nehru Medical College, KLE Academy of Higher Education and Research, Belagavi, Karnataka, India.

²Department of ENT and Head & Neck Surgery, KAHER's Jawaharlal Nehru Medical College, KLE Academy of Higher Education and Research, Belagavi, Karnataka, India.

Abstract

Foreign body in aerodigestive tract is not an uncommon condition especially in paediatric age group. However in adults it is usually seen most commonly in psychiatric patients or mentally disabled individual. We present a case of accidental foreign body ingestion in an adult male. The case report highlights the importance of using the right investigation to detect the foreign body thereby aiding in proper management to prevent morbidity and mortality.

Keywords: Foreign body; Aerodigestive tract; Radiology

Introduction

Foreign body (FB) ingestion in the aerodigestive tract is a common problem and is considered a serious cause of morbidity and mortality. Foreign body ingestion is more common in children especially below the age of 3 years where the molars have not formed making them more prone for swallowing. On the other hand foreign body ingestion in adults is rare. It might be due to accidental ingestion, psychiatric disorders or a mentally disabled individual [1]. Coins are the most commonly ingested FBs. Others include button batteries, fishbone, marble, stones or piece of meat etc. Commonly, foreign bodies in the aerodigestive tract present with dysphagia, difficulty in breathing, stridor or change in voice depending on where the foreign body is impacted [2,3]. Radiology plays an important role in identifying the FB and also their position. During emergencies, the knowledge of the right investigation helps to save time and make appropriate referral of the patient for further management. The need increases even further during a pandemic such as the COVID-19. In this case report, we are describing an interesting case of ingestion of a plastic cap which was a challenge to identify on conventional imaging.

Case Report

An 18year old male presented to the casualty at midnight with accidental ingestion of a plastic cap from a cough syrup bottle. He presented after 5 hours of ingestion with pain in the mediastinal

region. There was no history of dysphagia, drooling of saliva, breathing difficulty or choking sensation. On examination patient was conscious and oriented with saturation of 100 %. In order to identify and confirm the level of the foreign body HRCT chest plain (Figure 1) was ordered which showed us a suspicious area at the mid esophageal level but was not conclusive of the foreign body. However going by the history and high index of suspicion, the patient was further evaluated after consulting the radiologist. An HRCT thorax with oral contrast (Figure 2) was ordered which showed a radio - opaque area in the stomach suggestive of a FB. After confirming the Hounsfield Units (HU) which was -67HU, it was suggestive that the opacity is due to the plastic cap. Patient was referred to gastroenterology for further management.



Figure 1: HRCT thorax plain showing a suspicious area at mid oesophageal level but non conclusive of FB.

Correspondence to: Padmavathy O, Department of ENT and Head & Neck Surgery, Jawaharlal Nehru Medical College, KLE Academy of Higher Education and Research, Belagavi, Karnataka, India, Tel: 8150026570; E-mail: paduop@gmail.com

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Figure 2: HRCT thorax with oral contrast showing radiolucent FB in the stomach.

Discussion

Foreign bodies in aerodigestive tract are widely documented especially in the paediatric age group. However, foreign body aspiration in adults is mostly seen in those who are depressed, psychologically disturbed, seeking attention or in jugglers or magicians where they swallow objects during their performance. Unusual foreign bodies in the aero-digestive tract pose challenges in diagnosis and treatment [1,2].

The normal oesophagus has 3 primary areas of physiologic narrowing: the upper oesophageal sphincter (UES) that includes the cricopharyngeus muscle, the middle esophagus where oesophagus crosses over the aortic arch, and the lower esophageal sphincter (LES). In children, approximately 74% of foreign bodies are entrapped at the UES level. In adults, approximately 68% of obstructions occur at the distal oesophagus associated with pathologic abnormalities. Possible complications include local injury to the mucosa such as abrasion, lacerations, necrosis, and stricture formation. Other serious complications include injury beyond the esophagus such as airway obstruction, esophageal perforation, tracheoesophageal fistula, vascular injury (e.g., aorto-esophageal fistula), retropharyngeal abscess, mediastinitis, pericarditis, or vocal cord injury [3].

Three special types of foreign body ingestions with a higher risk of complications are button batteries (also called “disc” or “coin” batteries), multiple magnets and sharp-pointed objects [4,5].

When it comes to foreign body detection, plain film radiography is the initial imaging modality of choice due to its ability to detect most foreign bodies quickly and cheaply with relatively low radiation exposure. Objects denser than soft tissue will absorb more rays, and therefore, appear in greater contrast to the surrounding areas. Due to increased density, objects such as metal, glass, and gravel are considered radiopaque, and multi-view, X-ray imaging is highly sensitive and specific when looking for these objects in soft tissues. However, gravel and graphite in or near bone may be difficult to identify due to the objects having a similar density as the bone. Radiography is also less effective for identifying radiolucent objects such as wood, plastic.

Imaging is effective at detecting most foreign bodies as well as aiding in their removal by clearly localizing the object of interest within the tissue. It works similar to radiography, but it has an improved ability to differentiate tissue densities, allowing for better visualization of inflammation, abscesses, and granulomas that are frequently secondary clues to a retained foreign body. It comes with the added benefit of being able to provide a more accurate three-dimensional localization of the foreign body. One study found a sensitivity of 68% and specificity of 98% for the detection of all types of foreign bodies using CT imaging. The Hounsfield unit

is a quantitative numerical scale to describe CT radiodensity and differs for different foreign bodies like hypodense materials air (-1000HU), wood (-150 to -464 HU) and plastic (-47 to 100HU) and hyperdense materials include iron (>3000 HU) [6-8].

Bronchoscopy and oesophagoscopy is often performed for definitive diagnosis and management, however, it is invasive and procedure related serious complications may occur. Recently developed high resolution computed tomography (HRCT) and virtual bronchoscopy is a non invasive technique that provides realistic 3D views of the tracheobronchial tree. In addition to the detection of foreign body HRCT and virtual bronchoscopy can help the surgeon plan for operative bronchoscopy and safe removal of foreign body [9-11].

The ability of HRCT thorax in terms of sensitivity and specificity to clearly detect plastic foreign bodies in the aero digestive tract is scarce and hence its difficult to clearly perform a single investigation and confirm the diagnosis. During pandemics like the Covid - 19, it is difficult to maintain the turn around time in the emergency room. Knowledge about the right investigation helps to reduce time and refer patient to the concerned specialty for appropriate further line of management thus minimising exposure risk to the potentially non infected patients.

Conclusion

Foreign bodies in aerodigestive tract are very common and if not treated promptly leads to morbidity and mortality. A proper knowledge regarding the right investigations and proper technique of removal of the foreign body is required to prevent dangerous complication.

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