Oesophageal foreign body causing stridor in an infant: Is a rare forgotten cause

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A B S T R A C T
A 10-month old boy presented with stridor for a month, was repeatedly treated as croup/asthma with steroids and beta agonists. This case is being presented to emphasize, that stridor in infants, may be the only mode of presentation of an impacted upper oesophageal foreign body. In the case presented, since there was no improvement, an X-ray of the neck and chest was taken. The X-ray revealed a metallic foreign body in the upper oesophagus as the cause of his stridor. The foreign body was successfully removed endoscopically. The foreign body appeared to be a metallic pendant. This case highlights, the importance of recognizing, the rare and often forgotten cause of stridor in infants, in the absence of a history of foreign body ingestion.

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Stridor caused by impacted oesophageal foreign body is rarely reported in the English language literature (Fig. 1). In 1974, Winship et al. reported a case where the child initially underwent a tracheostomy for worsening stridor. At that time it was not recognized, that oesophageal foreign body can cause stridor, even if there was a history of foreign body ingestion [1]. Recently Hiejima et al. tabulated, 16 cases of stridor caused by oesophageal foreign bodies, reported in the English language literature over a 20 year period [2]. Of the 16 cases reported 11 cases required operation to remove the foreign bodies explaining the complexity of this problem [2].

1. Case report

A previously well 10-month old boy, presented with a one month history of stridor and harsh cough. There was no history of choking episodes or any ingestion of foreign body witnessed by the parents. He was treated by his General Practitioner on multiple occasions as croup/wheezing. Despite this treatment his stridor and cough got progressively worse.

In addition, his parents noticed the child having difficulty swallowing solids which was followed by vomiting during the later part of his illness. There was no history of drooling of saliva or any pain on swallowing. However he was able to tolerate liquids well.

Eventually an X-ray of the neck and chest was taken, revealed a foreign body on the upper esophagus (Fig. 1). Therefore he was transferred to our tertiary referral unit for further management.

On arrival at the emergency department he had loud inspiratory stridor with suprasternal recession. His vital signs were normal. He did not require supplemental oxygen at any stage.

He underwent a CT scan of the neck and chest with intravenous and oral contrast, instilled via a nasogastric tube positioned just above the foreign body. The scan was done under general anesthesia and endotracheal intubation to protect the airway.

The CT scan revealed a butterfly shaped metallic foreign body, measuring 23 x 22 mm within the upper oesophagus, extending from the upper border of T1 to the upper border of T3. There was evidence of direct compression on the posterior wall of the trachea by the foreign body (Fig. 2A and B). We performed a flexible bronchoscopy as the initial procedure to assess the trachea, followed by foreign body retrieval. The flexible bronchoscopy confirmed that the narrowing of the trachea was due to the external compression by the impacted esophageal foreign body. There was also no evidence of mucosal breach or granulation tissue, suggestive of foreign body penetration of the tracheal wall.

Subsequently we managed to remove the foreign body (metallic pendant) with the rigid oesophagoscope, without any damage to the oesophagus. The infant made an uneventful recovery, and his stridor disappeared post removal. We plan to review him in 6 weeks with a contrast study of the oesophagus.
2. Discussion

Stridor due to impacted upper esophageal foreign body in infants and toddlers is a well recognized entity. This is often forgotten, leading to unnecessary delays in diagnosis, which rarely leads to fatal consequences. Around 40% of foreign body ingestion in infants and toddlers are unwitnessed [3].

The respiratory symptoms related to impacted upper esophageal foreign body consists of stridor, cough, wheezing, pneumonia and rarely aphony due to bilateral vocal cord palsy [4].

The most likely mechanism for stridor, is direct compression of the posterior wall of trachea by the impacted upper esophageal foreign body, as illustrated by our case. Other mechanisms include, periesophageal inflammatory mass evoked in relation to a long standing organic foreign body or direct penetration of the tracheal wall leading to a trachea-oesophageal fistula. The compressive effect on the trachea by the oesophageal foreign body, is due to the soft pliable nature and the narrower diameter of the trachea in children, compared to adults.

The presence of radiolucent oesophageal foreign bodies causing stridor, as reported by Hiejima et al. [2], and Haegen et al. [5] respectively, show the diagnostic challenges involved in the diagnosis and management.

The degree of damage depends on the nature of the impacted oesophageal foreign body, duration, pre-existing oesophageal/tracheal pathology, site of impaction and the age of the child.

The lethal consequences of impacted button battery are well documented. In some cases deaths occur due to oesophago-aortic fistula caused by erosion of the button battery [6].

The surgical options in case of failed endoscopic removal are right thoracotomy or cervical approach to the upper esophagus. Our operative strategy is to attempt cervical approach to the upper oesophagus and to reserve right thoracotomy as the last option.

In the case presented, the inert nature of metallic foreign body made endoscopic removal successful. However the case illustrated by Haegen et al., required a right thoracotomy due to the inflammatory reaction provoked by the organic foreign body, causing it to adhere to the oesophageal wall [5].

In our case, the dual-energy CT scan with intravenous and oral contrast, gave us enough information to guide management. In cases of long standing foreign body impaction, accurate information regarding penetration of the oesophageal wall is necessary, before attempting endoscopic removal. Therefore, in our case that was the main indication for the CT scan before the endoscopic removal. Flexible bronchoscopy is a useful investigation to verify direct tracheal penetration by the foreign body, prior to attempted endoscopic removal.

In summary, this case illustrates the importance to include unrecognized oesophageal foreign body, as a cause of unexplained stridor in children. The absence of any oesophageal symptoms, should not preclude in making this diagnosis. We also advise clinicians, to consider doing an X-ray of neck and chest as the initial diagnostic workup, in cases of sudden onset of unexplained stridor in children.

Fig. 1. X-ray of the neck and chest showing the metallic foreign body in the upper oesophagus.

Fig. 2. a) CT scan of the neck with oral contrast showing tracheal narrowing. There was no evidence of contrast extravasation. b) CT scan of the neck without oral contrast showing tracheal narrowing.
References


