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Oesophageal Foreign Body : A Toddler with Recurrent Stridor

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Abstract
Stridor is not an uncommon complaint among the paediatric population presented to the Emergency Department. It is the cardinal sign of impending total airway obstruction. One of the obstructions can be due to a foreign body (FB) lodged in the airway. We encountered one toddler boy who presented with recurrent stridor and was mistakenly treated as croup, in which the initial radiographs and flexible nasopharyngoscopy were unremarkable. A piece of rigid round aluminium foil found within the oesophagus causes tracheal narrowing and inspiratory stridor. High clinical suspicion of the treating physician is needed for the diagnosis. Timely management of FB impaction remains crucial.

Keywords
Stridor, Oesophageal foreign body, Croup, Toddler

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Stridor is an abnormal, high-pitched respiratory sound resulting from turbulent airflow through the narrowed upper airway due to various congenital or acquired conditions. It is a common complaint among the paediatric population presented to the Emergency Department and the cardinal sign of impending total airway obstruction, especially in children presented with acute symptoms. The age, past medical history and onset of symptoms can aid in distinguishing the underlying cause.

Foreign body (FB) ingestion is common among children, especially boys and those under the age of three [1]. Most ingested FB can pass through the gastrointestinal tract without any complication. Less commonly, FB can be impacted along the oesophagus, presenting as dysphagia, drooling, food regurgitation, hypersalivation, vomiting or reduced oral intake [2]. An eyewitness may suggest the diagnosis, however, in patients presenting with non-specific respiratory symptoms or even asymptomatic, diagnosis can be challenging.

Stridor is not a common presenting symptom for impacted FB in the digestive tract. We encountered a toddler with impacted aluminium foil in the oesophagus, who presented with recurrent stridor and was mistakenly treated as croup, in which the initial radiographs and flexible nasopharyngoscopy were unremarkable. We wish to emphasise the role of radiological imaging in the diagnosis and treatment of oesophageal FB in the paediatric population.

Case Report

An 18-month-old toddler boy presented to the ear, nose and throat (ENT) outpatient clinic with recurrent episodes of stridor and intermittent cough for the past one month. The inspiratory stridor was exacerbated by crying and lying supine. No fever, cyanotic episode, vomiting or drooling of saliva. No reduced oral intake. His parents could not recall any preceding history of FB ingestion. His vaccination status was age-appropriate.

He had 4 visits to the private clinic over the one-month duration for the same presentation. The same diagnosis of croup was made during all the visits because he responded promptly to the medical therapy including adrenaline nebulisation, oral steroid and oral azithromycin. However, the stridor recurred a few days after each medical treatment.

Upon examination, the child's weight gain and development were age-appropriate. Apart from the loud inspiratory stridor which became more apparent when he was crying, the respiratory system was unremarkable. There were no palpable cervical lymph nodes. On cervical and chest radiographs, there was no radiopaque FB, lung atelectasis or prevertebral soft tissue thickening (Figure 1).

A flexible nasopharyngoscopy was performed in the ENT clinic but there was no significant finding. The child was then subjected to direct laryngoscopy and flexible bronchoscopy for the assessment of the subglottic airway. There was a narrowing at the mid-trachea level, suspecting an extraluminal tracheal compression.

To investigate the tracheal compression, his contrast-enhanced Computed Tomography (CECT) of the neck and thorax demonstrated a round intraluminal hyperdense FB located within the oesophagus at the level of T1 to T3, measuring a diameter of 1.8cm, causing adjacent focal tracheal narrowing (Figure 2).

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To remove the FB, the child underwent direct oesophagoscopy. A piece of rigid round aluminium foil was found within the oesophagus at approximately 13 cm from the incisor (Figure 3). A minimal thick yellowish discharge was seen at the location after the removal of the FB. The patient had an uneventful recovery and was discharged well two days post-procedure. No recurrence of stridor was noted during his one-month clinic follow-up.

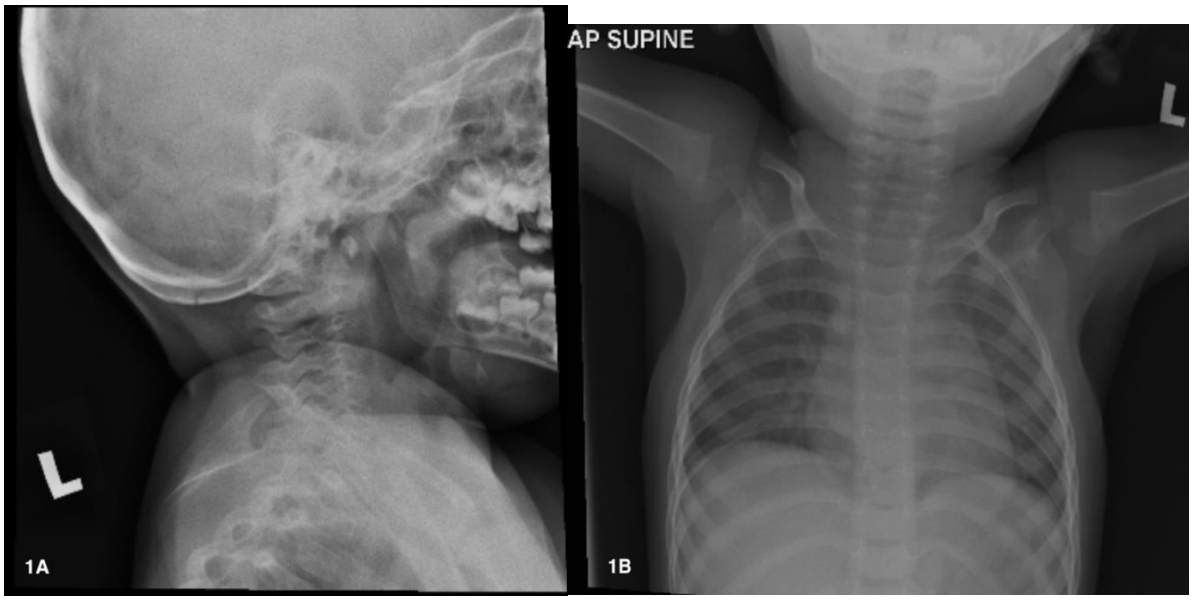

Figure 1. Lateral cervical (Figure 1A) and frontal chest (Figure 1B) radiographs showed no radiopaque FB.

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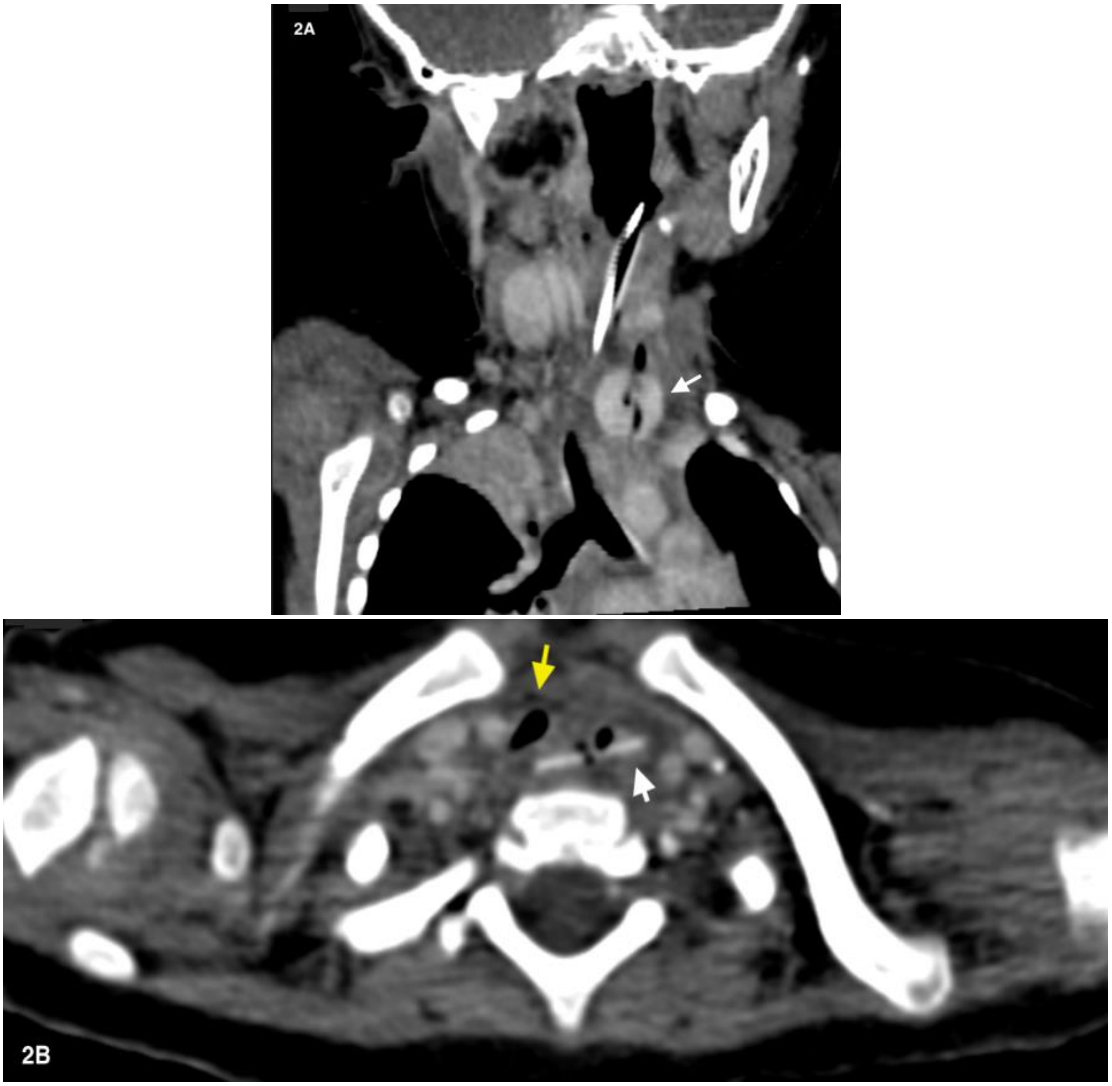

Figure 2. Contrast-enhanced Computed Tomography of the neck and thorax in coronal (Figure 2A) and axial (Figure 2B) views showing a round hyperdense FB located within the oesophagus (white arrow) causing adjacent focal tracheal narrowing (yellow arrow).

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Figure 3. FB – a rigid round aluminium foil.

Discussion

Stridor is a respiratory symptom that signifies airway obstruction. Timing of the stridor during the respiratory cycle can provide a useful clue to the level of obstruction. Inspiratory stridor usually indicates a laryngeal obstruction, expiratory stridor suggests a tracheobronchial obstruction, whereas biphasic stridor is associated with subglottic or glottic anomalies [3]. In infants and toddlers with acute stridor, croup and FB aspiration remain the most common causes [3]. According to the epidemiology and age distribution, our patient was treated as croup during the first few clinic visits. However, recurrent stridor soon after each medical therapy within a short duration should alarm the physician to re-evaluate the diagnosis and treatment plan.

Evidence shows that the paediatric population aged between six months and three years has special behavioural characteristics that make them susceptible to FB ingestion. Their learning process, desire to explore, lack of teeth and cognitive inexperience account for 80% of the associated factors. Males are more vulnerable than females with a ratio of 1.7:1 [4]. FB aspiration should be suspected in toddlers presenting with acute stridor, especially in the absence of fever and other signs of infection. The literature and case reports show that these children are commonly mistakenly being treated as croup and the impacted FB can be either within the airway or upper gastrointestinal tract [5, 6 7]. Our patient was found to have oesophageal FB and the presentation of stridor was secondary to the external compression causing airway narrowing.

Although our patient is in the susceptible age group for croup which is between six months and six years [3], he remained afebrile throughout the stridor episodes and his symptoms recurred shortly after each treatment. An eyewitness of the event can be absent in up to 40% of FB ingestions and up to 50% of cases remain asymptomatic after the FB ingestion [4]. We wish to highlight the importance of having broad differential diagnoses for stridor, especially when the patient does not meet the typical clinical context of common conditions.

We also emphasise that normal initial radiography cannot exclude FB ingestion as certain FB is radiolucent. In our case, it is interesting that the ingested aluminium foil which is a metallic object is not visualised on a plain radiograph. The treating physician should be aware that aluminium is the only metal object that has

low radiodensity due to the low atomic number and thus can be inapparent in plain film. The United States government once abandoned the plan to produce aluminium pennies because many physicians pointed out the danger to children if a common coin were radiolucent [8].

Conclusion

Oesophageal FB needs urgent intervention to prevent life-threatening complications. Diagnosis can be difficult due to atypical clinical symptoms. A broad differential diagnoses need to be considered in treating children presented with stridor, especially if there is atypical natural history and lack of treatment response. High clinical suspicion is the key!

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