

# Not all wheeze is asthma: A case of central airway foreign body mimicking asthma

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### SUMMARY

Foreign body aspirations are more commonly seen in the paediatric age as compared to adults. This is more widely seen in the older population due to the impairment of protective airway mechanisms or the absence of the swallowing reflex, for instance, in neurological diseases, head trauma, alcohol intoxication, sedation, or complications from dental manipulation. We report the case of a betel nut causing airway obstruction in an elderly lady, which was treated multiple times as respiratory tract infection and asthma. Subsequently, a bronchoscopy was performed. Following which, the betel nut was removed causing resolution of symptoms.

### INTRODUCTION

Foreign body aspiration is a rare occurrence in adults.<sup>1-5</sup> Patients usually present with subacute symptoms namely cough, wheeze, shortness of breath, and haemoptysis.<sup>1,2,4-7</sup> They are often misdiagnosed as having a common cold, pneumonia, or asthma refractory to inhalers. Interventions include flexible bronchoscopy, rigid bronchoscopy, and removal via thoracotomy.<sup>2,7,8</sup> The more popular approach is through flexible bronchoscopy, as it was found to be very effective according to some studies. In one such study, Sehgal et al. had found that 65 out of 25,998 flexible bronchoscopies they reviewed were done to remove foreign bodies; their success rate was almost 90%.<sup>1</sup>

### CASE REPORT

We report the case of a 65-year-old lady, who has no known medical illnesses. She complained of a chronic cough of more than 2 months duration, which was non-productive and with no diurnal variation. She initially had a fever 2 months ago, which resolved within a few days. Subsequently, she started to develop wheeze, shortness of breath, loss of appetite, and a 4-kg weight loss in 1-month duration. However, she did not experience night sweats, haemoptysis, or any recent exposure to pulmonary tuberculosis patients. She had visited a few clinics and completed multiple courses of antibiotics over the past couple of months; however, the cough persisted. Subsequently, she was started on inhaled corticosteroids and a diagnosis of late-onset bronchial asthma was made. She was tested negative for tuberculosis and was seen in a local health clinic. She was referred to our centre due to recurrence of symptoms and no clinical improvement for further management. Upon reviewing her in the respiratory clinic, she was not tachypnoeic and oxygen saturation was 100%

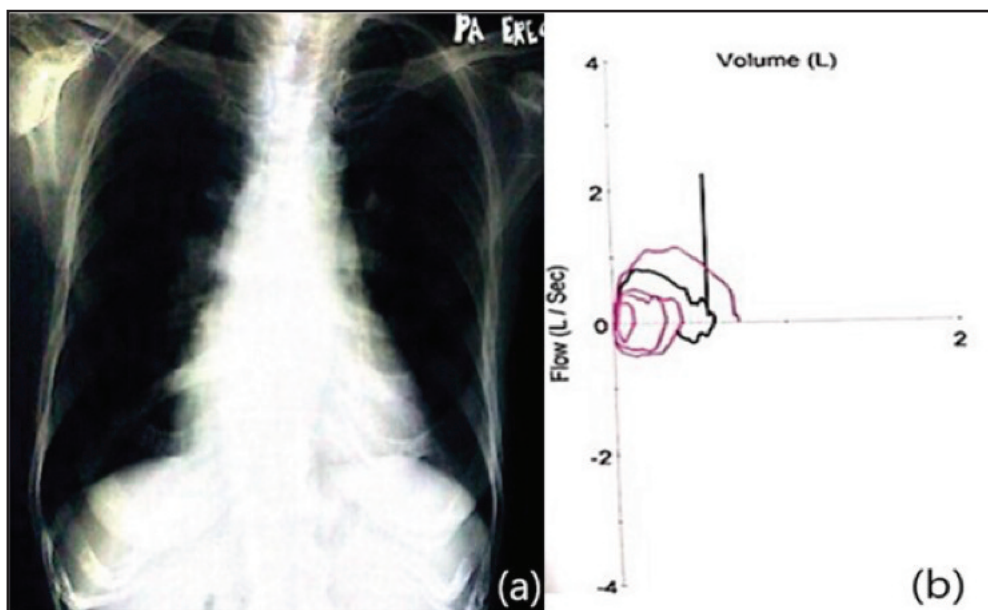
under room air, although it was noted that she had an audible stridor. Lung auscultation revealed inspiratory rhonchi. The chest radiograph was normal (Figure 1a). A spirometry showed features suggestive of variable extrathoracic obstruction (Figure 1b). Although her spirometry technique was not correct, that was the best she could perform, and flattening/limitation of the inspiratory limb was noted in the spirometry. She underwent flexible bronchoscopy (Olympus BF Type 1T180) under conscious sedation immediately via oral approach and a foreign body was identified at the subglottic area (Figure 2), which was promptly removed using an extraction basket (Vedkang). A betel nut was identified to be causing the obstruction. Her symptoms resolved post bronchoscopy. She was discharged and remained well when seen in the respiratory clinic 1 month later for a follow-up consultation.

### DISCUSSION

Betel nut or areca nut chewing is a time-honoured custom in Southeast Asia, and it presents a rare complication of being aspirated into the airways, especially in healthy adults. As a result, clinicians do not diagnose it early. Such cases are often misdiagnosed, delaying appropriate management especially if there is no prior history of choking.

It is necessary to elicit a detailed history of presenting symptoms and to perform a full examination to evaluate causes of wheezing, especially in elderly patients. For most patients, the initial evaluation will include ECG, spirometry, and a chest radiograph. A clinician should be able to differentiate between wheeze and stridor. A wheeze is a continuous musical sound that is by the oscillation of opposing walls of an airway that is narrowed. Wheezes are usually high pitched, consist of single or multiple notes, and occur during inspiration or expiration (more commonly expiration). Stridor refers to a monophonic sound that is loudest over the anterior neck and is typically high-pitched and predominantly inspiratory. These steps will help the clinician to narrow down the possibilities. If symptoms persist despite initial evaluation or treatment, primary care physicians should refer the patients to a pulmonologist for further management.

This patient presented with recurrent respiratory infections and asthma-like symptoms for more than 2 months before being diagnosed with an airway obstruction. Many patients who have been managed or treated as asthma in primary care did not have baseline spirometry.<sup>9</sup> This point has been



**Fig. 1:** Respiratory system investigations. (a) Chest radiograph showing over penetration and no evidence of atelectasis (b) Lung function test observing features suggestive of variable extra-thoracic obstruction.



**Fig. 2:** Bronchoscopic image showing of the foreign body.

asserted in the ASCOPE study published in the year 2020 and in line with previous reports.<sup>9</sup> The possible causes are shortage of access to spirometry<sup>9</sup> and also COVID-19 pandemic restrictions.

Foreign body aspirations can present with symptoms such as cough, dyspnoea, wheeze, and haemoptysis.<sup>1,2,4,7</sup> Patients may not recall an aspiration event, especially adults. Commonly aspirated foreign bodies are food particles and broken fragments of teeth. In up to 80-90% of cases, radiolucent objects may not be detected on chest radiographs, such as food and plastic particles.<sup>4,7</sup> In these instances, a chest CT will be required.<sup>6,10</sup> The sensitivity of a multidetector CT to detect a foreign body is almost 100%, with a specificity of 66.7-100%, according to a study by Gordon et al.<sup>10</sup>

The complications of a chronically retained foreign body include recurrent pneumonia, lung abscess, bronchiectasis, haemoptysis, and the development of inflammatory polyps at the site of impaction.<sup>1,4-6,8</sup> The most common location for a foreign body to be embedded is within the right bronchial tree, due to the vertical orientation of the right main bronchus and larger diameter in comparison to the left main bronchus.<sup>1,3-7</sup>

In this case, the preferred instrument used to retrieve the foreign body was the flexible bronchoscopy, which was developed in 1968 by Shigeto Ikeda,<sup>3,4</sup> and has now become the gold standard means for localization and retrieval of an airway foreign body. This method has revolutionized the field of bronchoscopy and is significantly more advantageous as it can be manoeuvred into the distal bronchus to retrieve smaller objects safely.<sup>1,2,3,6</sup> It is also the more favourable method used in patients with cervical instability or facial trauma.<sup>2,3</sup> Usually, a flexible bronchoscope with an outer diameter 6.0-6.1 mm and an inner diameter of 2.8 mm will be used. These bronchoscopes will have a 120° field of view with angulations of 180/130 degrees. Unlike rigid bronchoscopy, it does not require the utilization of general anaesthesia making it an outpatient procedure that is costly and time-efficient.<sup>1,4,8</sup> In addition to that, a mechanically ventilated patient would be able to benefit from this procedure, as it allows the removal of the foreign body without the need for extubation. Bronchoscopy for foreign body removal requires proper instruments for its safe retrieval such as forceps (V-Shaped grasping forceps, rat tooth grasping forceps), baskets (mini grasping basket or grasping basket, fishnet basket) or cryoprobe.

In a study that compared flexible and rigid bronchoscopies, it was shown that flexible bronchoscopy was associated with lower mortality and morbidity in contrast to rigid bronchoscopy (1% vs 12%, respectively) as general

anaesthesia was avoided.<sup>1</sup> However, in cases of complex foreign bodies that were unable to be removed by flexible bronchoscopy or if flexible bronchoscopy failed immediately causing massive airway obstruction, rigid bronchoscopy would be the preferred choice.<sup>1,3,4,6,7</sup>

### CONCLUSION

Due to its non-specific nature, adult foreign body aspirations are often misdiagnosed as an obstructive airway disease and consumes months, if not years, to identify and treat accordingly, as in the case of the elderly lady that we have presented. A high index of suspicion is needed by clinicians to reappraise the diagnosis of bronchial asthma and further investigate recurrent respiratory infections. Flexible bronchoscopy is the preferred method as it is both diagnostic and therapeutic in the aspect of foreign body removal from airways in adults, with a high success rate and low risk of complications in the hands of a skilled operator.

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### CONFLICT OF INTEREST DECLARATION

The authors declare no potential conflict of interest with respect to the authorship and publication of this article.

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