

Peanut aspiration: an avoidable life-threatening condition

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Foreign body aspiration is a potentially fatal condition. Yet, an accurate diagnosis may not be easy. Management is also challenging and requires a high level of expertise with proper instruments. In this article, we report our experience in the management of peanut aspiration in two young children by means of a ventilating bronchoscope.

Introduction

Foreign body aspiration, though not commonly reported in Hong Kong, can be potentially life-threatening. Both the presentations and radiological findings of this potentially fatal condition are variable. The key to successful management is prompt and accurate diagnosis, which may not be straightforward. In this article, we present two young patients who were admitted with peanut aspiration, with a view to raising the awareness of clinicians about this emergency.

Case reports

Child A was a 15-month-old girl who presented with wheezing after a history of peanut ingestion 2 days earlier and was admitted to hospital in May 2011. After the development of wheezing, she remained active with nothing to suggest shortness of breath. Because of the apparently stable condition, her mother did not seek medical advice immediately and only did so as the wheezing persisted. Upon arrival, she was afebrile but tachypnoeic. Reduction of breath sounds was noted on the right side with hyper-resonance on the left side. The chest X-ray showed left lung hyperinflation, a collapsed right lung and mediastinal shift (Fig 1). Based on the clinical features and X-ray, the diagnosis of foreign body aspiration was made and emergency bronchoscopy undertaken. A fragmented peanut was found to be lodged in the left main bronchus causing a 'ball-valve' effect. The peanut was removed in piecemeal fashion with a combination of forceps, suction, and Fogarty catheter instrumentation via the ventilating bronchoscope. Luminal patency was confirmed at the end of procedure. The patient stayed as an in-patient for 3 days, received daily chest physiotherapy, and was eventually discharged home with a course of antibiotics. The pre-discharge chest X-ray showed clear lung fields.

Child B was a 23-month-old boy who was initially admitted for the management of gastroenteritis and fever in June 2011. The parents were not aware of any history of foreign body intake by the child. However, the routine chest X-ray revealed hyperinflation of the left lung associated with mediastinal shift. On further questioning, the parents revealed that the boy had a history of asthma and had had a recent 'flare-up' with coughing. This had been managed by bronchodilators and cough suppressant prescribed by general practitioner. They could only recall a history of a single choking episode at dinner 2 weeks earlier. Because of the diagnostic uncertainty, a computed tomography (CT) of the thorax with virtual bronchoscopy was undertaken. This indicated the presence of a foreign body at the distal left bronchus (Fig 2). Bronchoscopy was arranged immediately. A peanut was found in the left main bronchus, which was removed in a similar fashion as in child A. The boy subsequently enjoyed an uneventful recovery.

Key words

Airway obstruction; Bronchoscopy;
Child; Foreign bodies; Respiratory
aspiration

Hong Kong Med J 2012;18:340-2

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Discussion

The potential consequence of foreign body aspiration should not be underestimated, for which reason this condition should be regarded as an emergency requiring immediate attention. It is one of the leading causes of paediatric accidental death in the United States.¹ It commonly occurs in children younger than 3 years old, as they tend to put objects in their mouth. A local epidemiology study also revealed that among paediatric

patients suffering from this condition, 85% were below the age of 3 years.² In this age-group, the risk may also be increased by the immaturity of protective mechanisms in the upper airways.³

A recent review by Korlacki et al⁴ showed that commonly aspirated objects include nuts, plastic toys, sunflower seeds, and metal objects. In Hong Kong, peanuts and watermelon seeds have been reported to be the most commonly aspirated objects.² Not uncommonly, foreign bodies are aspirated in the absence of parental attention, which adds an additional hurdle to establishing a proper diagnosis. Patients present with acute respiratory distress or choking. Some individuals, however, do not have symptoms during the acute phase but eventually present with chronic cough or wheezing (as in child A) that is sometimes misdiagnosed as an asthmatic attack. Some children may not even have any respiratory symptoms but present with a delayed onset fever due to pneumonia or lung abscess (as in child B). Clinicians should always bear this diagnosis in mind when encountering similar complaints.

Similar to clinical manifestations, radiological findings are also variable. The chest X-ray is usually the first investigation ordered and occasionally the foreign body can be seen on the film.⁵ As in our two patients however, in the majority, the aspirated foreign bodies are radiolucent and not revealed on the X-ray, but lobar pneumonia and atelectasis due to airway obstruction are two common radiological findings.⁶ Sometimes, the foreign body can act as a 'ball-valve' and results in hyperinflation of the ipsilateral lung with mediastinal shift to the contralateral side. This may easily be misinterpreted as obstruction to an airway of the contralateral normal lung, in which collapse is due to compression. Endoscopists who perform such bronchoscopies should therefore always inspect both bronchi during assessment. As up to 40% of patients with foreign body aspiration have a normal chest X-ray,⁷ a negative X-ray does not exclude the diagnosis, especially if the history and clinical presentation are suspicious. In this regard, CT with virtual bronchoscopy can sometimes be helpful.⁸

Once the diagnosis is established, the aspirated body needs removal. This is usually done by means of rigid bronchoscopy. Because of its size limitations, flexible bronchoscopy can only be diagnostic and not relied on for therapy in children. Foreign bodies are commonly located at the right main bronchus, followed by left main bronchus, and the trachea.⁹ However, diffuse involvement may also ensue, and therefore endoscopist should make a full inspection of the trachea and bronchi. Regarding the technique of foreign body removal, ideally, it may be extracted using forceps. Regrettably, especially for objects that have been impacted for a period of time and

花生誤入氣管引致梗塞：一個足以致命但可避免的情況

異物梗塞是一種潛在性致命的疾病。要達至準確的診斷絕非容易，而處理梗塞病例不但具挑戰性，且需要高水平的專業知識和適當的工具。本文報告兩名幼兒因花生誤入氣管引致梗塞的病例，處理方法是使用通氣支氣管鏡。

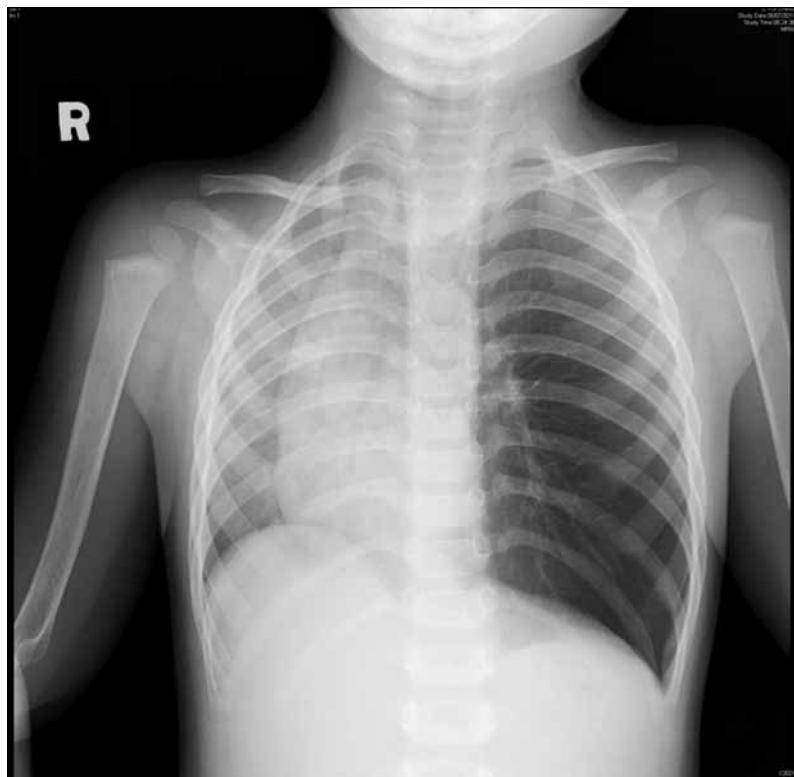


FIG 1. Chest X-ray of child A showing hyperinflation of left lung

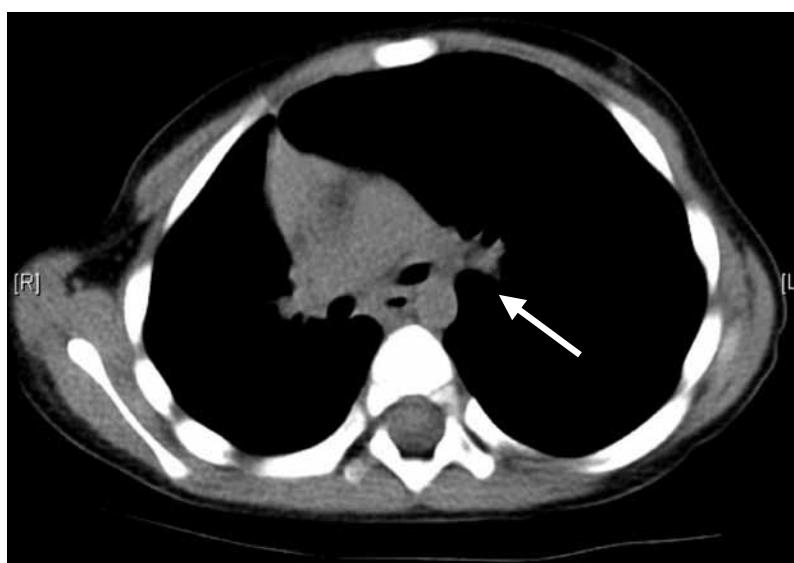


FIG 2. Computed tomography showing the presence of a foreign body at left main bronchus (arrow) in child B

are partially dissolved by bronchial secretions, they may be too fragile to grasp. For this, we found the use of a Fogarty balloon quite useful. With a balloon at the distal end of the catheter, small pieces of aspirated foreign body can be retrieved as for an embolectomy. Although this is not a common practice, this technique has also been reported in the literature.¹⁰ It must be emphasised, however, that therapeutic bronchoscopy in infants and young children is potentially hazardous. It therefore requires experience and expertise, and is preferably performed in a specialist centre.

Clinical management does not conclude with the end of the operation. Postoperative chest physiotherapy is important to clear any residual bronchial secretions. Furthermore, all tiny fragment may not be completely removed during bronchoscopy, for which physiotherapy can help

the patient to cough out any remnants. A course of broad-spectrum antibiotics may also be useful.

In conclusion, foreign body aspiration can ensue without the parents noticing. Parents should keep their children, especially those under the age of 3 years, away from small objects. When presentation is delayed, aspirated objects are more difficult to be retrieved and more likely to cause complications. There should be no delay in seeking appropriate medical advice for children with suspected foreign body aspiration. For attending clinicians, this differential diagnosis should always be included in children who present with choking, wheezing, or chronic cough. An accurate history of foreign body ingestion is not always available and requires a high index of suspicion. Once the diagnosis is made, the patient should be referred to a tertiary centre where instruments and expertise are likely to be present.

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