

Airway foreign body: a difficult and often neglected diagnosis in asthmatic child in emergency department

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Foreign body inhalation is not uncommonly encountered in children. Diagnosis could be difficult if parent cannot recall any relevant clinical history. This is especially true for an asthmatic child as respiratory signs and symptoms are believed by most emergency physicians to be attributed to asthma alone. We present a case of inhalation of peanut to the left main bronchus in an asthmatic child who was initially misdiagnosed as exacerbation of bronchial asthma. Meticulous clinical history and careful physical examination supplemented by chest radiograph in full expiration would raise the clinical suspicion of an obstructing foreign body within the bronchial tree. The diagnosis was subsequently confirmed on bronchoscopy and the obstructing peanut was successfully removed. As emergency physicians, we cannot attribute respiratory symptoms in an asthmatic child to be due to asthma alone. In the presence of respiratory symptoms of acute onset, unilateral physical signs and radiological evidence of air-trapping, foreign body inhalation should be considered even in the absence of accurate clinical history. Prompt arrangement for bronchoscopy assessment is recommended. (*Hong Kong j.emerg.med.* 2002;9:217-220)

Keywords: Airway, asthma, foreign body

Introduction

Inhalation of foreign body is a serious problem in childhood contributing to significant morbidity and occasional mortality. Data from previous series reported mortality rate from foreign body inhalation ranged from 0% to 1.8%.¹⁻³ Despite the significant impact to child health, unsuspected and undiagnosed cases of foreign body inhalation still occurred.⁴ A positive history or physical examination finding cannot be obtained in some cases.^{2,3,5-10} Patient may present with asthma-like symptoms such as chronic cough or wheezing which often poses diagnostic difficulty for emergency physicians and paediatricians. The diagnosis of foreign body inhalation is often neglected in child with known history of asthma. We

report a case of foreign body inhalation which is initially misdiagnosed as bronchial asthma and is subsequently treated successfully via bronchoscopy.

Case

A 2-year-old boy presented to the emergency department with a 3-week history of on and off cough and noisy breathing. He has a known history of asthma and has been treated with inhaled bronchodilator and steroid in the past 1 year. He was playful and cooperative on general examination. There was no fever nor sign of respiratory distress. Examination of respiratory system was unremarkable. No wheezing or crepitation was detected on auscultation. Chest radiograph was unremarkable. The clinical diagnosis of upper respiratory tract infection with mild asthmatic exacerbation was made. He was treated with bronchodilator and with subjective improvement of his clinical symptom. He was discharged from emergency department with referral for early follow-up in paediatrics unit.

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Over the next two months, the child attended emergency department for three times with similar complaints. Physical examination findings are all negative. He was treated similarly with bronchodilators and discharged.

The child was assessed by paediatrician two months after the initial presentation. Detailed interview with the parents disclosed a history of taking peanut 7 weeks before the first presentation to emergency department and noted to have choking and severe coughing afterwards. A careful physical examination revealed decreased chest expansion and mild indrawing of intercostal spaces on the left side. There was decreased air-entry on the left. No wheezing or crepitation is detected. Because of the unilateral physical signs which

was suspicious of bronchial obstruction, chest radiograph in full expiration was requested. There was increased translucency and oligoemia affecting the left lung. (Figure 1) The left hemidiaphragm was slightly flattened and depressed. The ribs of left chest wall were more widely spaced than on the right to a slight. All radiographic features indicated the presence of air-trapping in left lung. No definite radio-opaque foreign body was demonstrated.

In view of high index of clinical suspicion of an extent obstructing foreign body within left main bronchus, urgent rigid bronchoscopy under general anaesthesia was performed by our surgical colleague. The left main bronchus at 1 cm from carina was completely obstructed by a peanut. There was severe mucosal



Figure 1. Frontal chest radiograph in full expiration showing generalized increased in translucency and oligoemia in left lung. The left hemidiaphragm is slightly flattened and depressed. The ribs of left chest wall are slightly more widely spaced than on the right.

reaction and oedema around the foreign body. The peanut was subsequently removed. The post-procedure course was uneventful. The child remained symptom free after 8 months of follow-up.

Discussion

Inhalation of foreign body into tracheo-bronchial tree is commonest in children between 1 and 3 years of age with slight male preponderance.^{1-3,7,11,12} Several factors contribute to inhalation of foreign bodies in this age group including social factors (e.g. carelessness of parents, children's habit of putting objects into their mouth, crying/playing during eating) and anatomical factors (e.g. absent molar teeth, inadequate control of deglutition) have been mentioned.^{2,9}

A positive history of foreign body inhalation can be obtained in 73% to 97% of cases.^{2,3,5-8,11} Cough and wheezing are the two most common presenting symptoms. Physical examination findings of decreased air-entry and wheezing occurs in up to 60-70% of cases.^{2,7,10} On the other hand, it is reported that 5-40% of patients with airway foreign bodies have normal physical examination.^{2,7,9,13} In our experience, definite history of choking is often absent or cannot be accurately recalled from parents or caretakers. In essence, foreign body inhalation should be considered in any child presenting with acute onset of cough and wheezing. This is especially true if there are unilateral physical signs of decreased air-entry and wheezing. The diagnosis is further substantiated by radiological findings of air-trapping over the affected lung.

The presence of underlying asthma in this child confuses the situation. It is not uncommon for emergency physicians, especially those who are inexperienced to attribute respiratory symptoms as being asthmatic in origin in children with known history of asthma without properly assessing other relevant clinical information. Unless parents or caretakers actively volunteer clinical history which is of sinister significance, alternative diagnoses are often neglected. This important point is well illustrated in our case. As an emergency physician confronting with

a wide variety of diseases, we should keep an open eye on every piece of clinical information.

As would be suspected from anatomic consideration, inhaled foreign bodies are more commonly located in the right than in the left bronchial system. Previous series reported that 42-70% of inhaled foreign bodies are lodged in the right main bronchus, 18.7-32.6% in the left main bronchus,^{1,7,11} 22% in right segmental bronchi, and 7% in left segmental bronchi,⁹ 3-27.5% in the trachea.^{2,9,11,12} The incidence of simultaneous multiple foreign bodies varies from 0.9% to 12.5%.^{1,2,7,9}

The value of chest radiograph in diagnosis of foreign body inhalation is being questioned. Mu et al¹⁰ reported that more than half of cases have normal radiological finding. Chest radiograph in full expiration is recommended for further evaluation in clinically suspicious cases. Air-trapping and consolidation are two most common radiological findings, which are found in 59% and 47% of cases in the series by Oguz et al.¹⁴ As majority of inhaled foreign body is not radio-opaque, the offending object is usually not identified on chest radiograph.

In summary, correct diagnosis of foreign body inhalation in an asthmatic child is difficult and often neglected. Clinicians should have a high index of suspicion in the presence of 'atypical' presentation of "asthmatic attack", unilateral or localized physical signs of decreased air-entry and wheezing and characteristic radiographic finding of air-trapping. Prompt treatment by means of bronchoscopic removal can be achieved with minimal risk of complication and high success rate in experienced hands.

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