

A Foreign Body Aspiration in a Preschool Child Mimicking A Multitrigger Wheezing

A Case Report and Review of the Literature

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Abstract: We report a child with a history of recurrent episodes of wheezing. At 3 months of age, the frequency of these episodes began to increase. Wheezing was associated with persistent cough and dyspnea with nocturnal awakening. The skin prick test was positive for pollen and pet dander. Airway endoscopy revealed the presence of a peanut, which obstructed the left main bronchus. Chronic cough and recurrent wheezing with symptoms between acute exacerbations could be signs not only of asthma but also of other disorders. Therefore, coexisting conditions should be evaluated whenever symptoms seem to be unusually severe or frequent.

Key Words: asthma, persistent cough, bronchoscopy, coexisting disease

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Wheezing, chronic cough, and dyspnea are common in preschool-aged children, and they normally lead to a diagnosis of asthma.

The European Respiratory Society has laid down guidelines for the definition, assessment, and management of wheezing disorders during preschool age. The European Respiratory Society classifies preschool wheezing disorders on the basis of the patient's temporal symptom pattern.¹

Episodic wheeze occurs in discrete episodes, usually with symptoms of a viral cold and with no wheeze between episodes. Multiple-trigger wheezing is caused by the exposure to several triggers, smoke and allergens being the most common ones, with symptoms being present between the acute exacerbations.²

However, other diseases, such as foreign body aspiration (FBA), bronchopulmonary dysplasia, congenital vascular abnormalities, congestive heart failure, cystic fibrosis, tumor, or malignancy can cause similar symptoms.

Foreign body aspiration is an important cause of respiratory distress during childhood, especially in infants and toddlers. Foreign body aspiration is a deceptive disorder: parents rarely suspect this condition, and x-ray study or physical examination results may be normal. At present, the definitive diagnostic and therapeutic procedure for FBA is fibrobronchoscopy, after which most children become nonsymptomatic in the short term. The persistence of nonresponding symptoms in a child with asthma should

be a warning sign. These symptoms may also be related to a co-existing disease, which must be excluded.

We describe the case of a child with a history of asthma, experiencing increasingly frequent wheezing episodes, cough and worsening dyspnea, with a persistence of symptoms between acute episodes. The child was later diagnosed with foreign body aspiration.

CASE

A 33-month-old white male was referred to us because of dyspnea, persistent cough, and wheezing in the previous 3 months.

He was born at 34 weeks of gestational age, with a birth weight of 2400 g. Pregnancy and delivery were uneventful. The mother had a history of asthma.

At 5 months of age, the child experienced recurrent viral-induced wheezing, which was treated with bronchodilators and oral corticosteroids by his pediatrician. No symptoms were present between the acute exacerbations. The skin prick test, performed at 31 months of age, revealed a sensitivity to pollen and pet dander. Three months before admission, the frequency of these episodes increased, and symptoms were present between the acute exacerbations.

On the basis of the increased frequency of wheezing episodes with incomplete healing, associated with persistent dry cough, dyspnea and tachycardia with nocturnal awakenings, his pediatrician decided to perform a chest radiography. The x-ray study revealed a left pneumonia, which was subsequently treated with antibiotics (amoxicillin) and bronchodilators (salbutamol) for 10 days. At the end of the therapy, no clinical improvement was reported. Therefore, the child was referred to our pediatric pulmonary clinic by his pediatrician. On physical examination, the child was dyspneic and irritable; pulmonary auscultation revealed an asymmetry of breath sounds between the 2 hemithoraces, owing to decreased breath sounds in the left hemithorax. Oxygen saturation was 92% to 94% on room air.

Therefore, a chest radiography was immediately performed. The results revealed a hyperinflation of the left lung with a contralateral mediastinal shift (Fig. 1).

On the basis of the clinical and radiological findings, the patient was admitted to our department. The initial working diagnosis was severe asthma with a suspected mucus plug or foreign body aspiration.

Therefore, we started intravenous corticosteroid therapy in association with bronchodilator treatment. The oxygen saturation was always maintained at greater than 92%, but the objectivity of lung and respiratory dynamics during the following 24 hours did not show any improvement. The next day, we repeated chest radiography, but no significant change was found in comparison with the previous x-ray study result. Therefore, we urgently performed an airway endoscopy. The upper airway and trachea were normal, but we discovered an almost completely occluding granuloma in the left main bronchus (Fig. 2). After displacing the

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FIGURE 1. Posteroanterior chest x-ray study performed on admission, showing a hyperinflation of the left lung with contralateral mediastinal shift.

granuloma, we found a foreign body, which was surrounded by granulation tissue because of the chronic airway inflammation.

The foreign body was removed and found to be a peanut. Within a few days, the boy was discharged with a normal physical examination and x-ray study result (Fig. 3).

DISCUSSION

Wheezing disorders are one of the most common childhood diseases, with specific characteristics in preschool-aged children. One third of all children aged 0 to 3 years have an episode of wheezing, and almost 60% of them stop wheezing by the age of 6 years. It is estimated that 50% of 6-year-old children have had at least 1 episode of wheezing.³

The diagnosis of asthma in infants and toddlers is difficult^{4,5}; the key to diagnosing it is to obtain a thorough description of history from the child's parents or guardians.⁶

Wheezing could be described in terms of its temporal pattern and divided into episodic (viral) or multiple-trigger wheezing.¹ One type can change into the other.

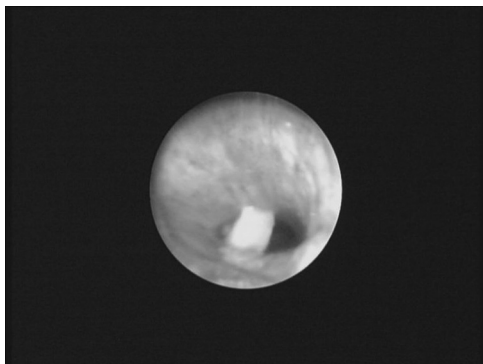


FIGURE 2. Airway endoscopy revealed a peanut obstructing the left main bronchus.



FIGURE 3. Posteroanterior chest x-ray study returned to normal after bronchoscopy.

In our case, the child's history initially led to a diagnosis of episodic wheezing; wheezing occurred in association with viral infections, with no symptoms between the acute episodes. However, wheezing later showed different characteristics, and the symptoms persisted also between the acute exacerbations. Thus, the pattern of wheezing changed from an episodic to an apparently multitrigger type.

The risk of persistent wheezing and the development of asthma after preschool age may be influenced by several factors.

Frequently, asthma, which begins at an early age, is associated with atopy. The genetic component is important in the development of asthma, and maternal asthma is one of its strongest predictors.⁷ Early allergic sensitization, which was present in our child, seemed to play an important role in persistent asthma.⁸

Furthermore, prematurity and low birth weight are also predictors of persistent wheezing and/or asthma.^{9,10}

Therefore, the clinical worsening could be interpreted as a sign of the underlying persistent wheezing disorder. However, the persistence of symptoms and the lack of response to treatment must lead to further investigations to exclude the presence of coexisting diseases.¹ Although dyspnea is a symptom of asthma, it may characterize a variety of conditions, such as FBA, bronchopulmonary dysplasia, laryngeal tracheomalacia, congenital vascular anomalies, congestive heart failure, cystic fibrosis, or malignancy of a tumor.

Foreign body aspiration is an important cause of respiratory distress, especially in infants and toddlers.¹¹ The peak incidence of FBA in children occurs between 1 and 2 years of age, when children are generally mobile and tend to put objects into the mouth.¹² Foreign body aspiration can cause acute or chronic symptoms,^{13,14} with choking, cough, wheezing, and dyspnea being the most common ones.^{13–15} On physical examination, children with FBA may have focal or generalized wheezing, decreased air entry, or even a clear chest. Wheezing is often reported as a monophonic inspiratory and expiratory wheeze.¹¹

In our case, the physical examination showed an asymmetry of breath sounds between the 2 hemithoraces, which was due to the almost complete occlusion of the left main bronchus.

If a secondary pneumonia develops, there may also be crackles on auscultation or dullness to percussion.¹¹

Foreign body aspiration is a deceptive condition. Indeed, parents suspected an FBA only in 59% of the cases in which it was then diagnosed by physicians.¹⁶ Furthermore, a foreign body was found in 9.5% of children who had normal physical examination and chest x-ray study results.¹⁵ Chest radiography

can show the presence of foreign bodies either directly or with radiographic signs such as emphysema, atelectasis, pneumonia, focal hyperinflation, and mediastinal shift.^{17,18}

Our case demonstrates that wheezing in preschool-aged children is a particular condition, which may be a sign of different coexisting illnesses.

The persistence of nonresponding symptoms in a child with asthma may be related to a coexisting disease.

Therefore, in cases with symptoms, which are particularly persistent or which do not respond to treatment, other suspected disorders should be confirmed or excluded by thorough investigations.

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