



Case report

Foreign body aspiration – Sometimes a tough nut to crack



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A B S T R A C T

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Foreign body aspiration (FBA) is a dangerous and potentially life-threatening event. We report the case of a 24-month old boy, who was initially presented with an episode of obstructive bronchitis to the family pediatrician. Then, while being treated with empiric antibiotics, he aspirated a peanut. Although resulting in a coughing episode, the mother did initially not ascribe any relevancy to it. Since the diagnosis of obstructive bronchitis had already been established, only an in-depth history taking session with the mother could help figure out, why the boy's symptoms got worse instead of better. This article underlines the importance of accurate history taking and clinical examination.

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Introduction

Foreign body aspiration (FBA) is a potentially life-threatening event and is responsible for annually 17,000 emergency room visits in the United States of children under the age of 14 [1]. Death by suffocation due to FBA is ranked as the fifth most common cause of accident related mortality in infants younger than one year [2]. The four most common causes of FBA are peanuts (36–55 percent of all FBAs in Western society), other food particles, hardware, and pieces of toys [3,4]. Accurate history taking is very important for diagnosing FBA. In a review of 200 cases, an episode of previous choking was present in 88% of reported cases [5]. Interestingly, many studies state a higher incidence rate in male than in female children [6–10]. The best method for diagnosing and – conveniently – for treating FBA is rigid bronchoscopy. In a review of 548 cases of clinically diagnosed FBA, bronchoscopy resulted in a 99% success rate in removing identified foreign objects [11].

Case report

A previously healthy 24-month old male infant was initially presented to the family pediatrician for a recurring fever over a period of two weeks. The mother reported a cough, worse after exertion, a runny nose and an intermittent episode of bilateral conjunctivitis.

During the physical examination the patient appeared relatively well, was alert and vitals were normal except for a temperature of

38 °C and tachypnea of approximately 40/min. After auscultation, the pediatrician diagnosed an episode of obstructive bronchitis. As a mean to further differentiate between viral and bacterial etiology, blood was drawn for a complete blood count (CBC) and C-reactive protein (CRP). CBC revealed leukocytosis of $24 \times 10^9/L$ and CRP was 457.15 nmol/L, therefore suggesting a bacterial etiology. Bronchodilator treatment, empirical antibiotic therapy with cefaclor and antipyretics were prescribed.

At a follow-up visit 3 days later the symptoms had not subsided. In fact the temperature was even higher than before, and reportedly ran up to 40 °C. At physical examination however, auscultation did not reveal the same obstructiveness as before. The pediatrician suspected pneumonia, due to a pathogen resistant to the prescribed antimicrobial therapy. The patient was then referred to the pediatric emergency department at our university hospital for further evaluation.

At that point, physical examination showed a high temperature of 39.3 °C, tachypnea of approximately 40/min and peripheral oxygen saturation of 95%. The auscultation revealed markedly diminished breath sounds over the right lung. The previously reported obstructive features had completely disappeared. On the other hand, typical signs of pneumonia, such as crackles, bronchial breath sounds or pleural friction rub could not be observed either.

The CBC at our emergency room showed unaltered leukocytosis of $25 \times 10^9/L$ and a high CRP of 1333.36 nmol/L.

Differential diagnoses at that moment included bacterial superinfection by a non-responsive pathogen to the prescribed antibiotic, a (tension-)pneumothorax, foreign body aspiration or an infection with another focus than the lungs – also not sensitive to the prescribed antibiotics.

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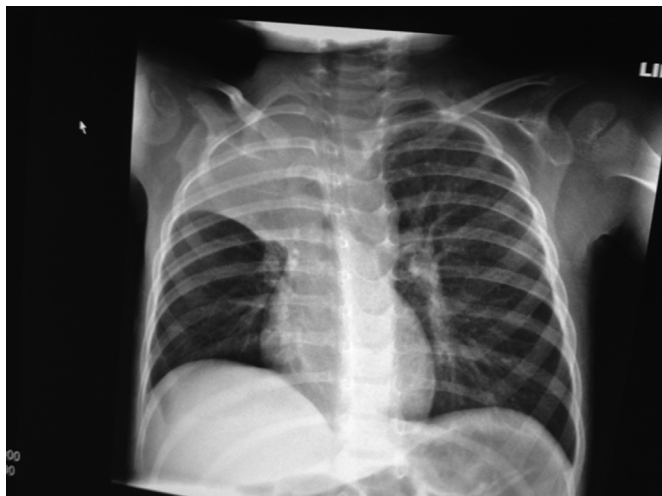


Fig. 1. Total upper-right lobe atelectasis due to bronchus obstruction.

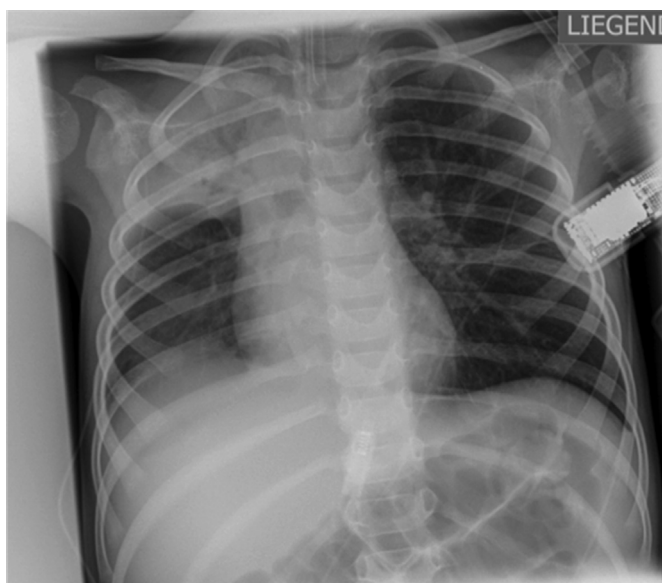


Fig. 2. Post-intervention X-ray. The atelectasis did not immediately resolve.

At that time, the most probable differential diagnosis was pneumonia due to a resistant bacterial pathogen. Pneumothorax was a possibility that could answer for the tachypnea and the diminished breath sounds. However the fever, the prolonged time of the episode and the high infection parameters made this a very unlikely diagnosis. And because neither the physical examination nor the known history suggested a different organ system as the point of infection, our diagnostic focus remained on the lungs.

To rule out foreign body aspiration, we started an extensive history taking session with the child's mother. And eventually she did recall an event, one day after the initial presentation to the family pediatrician, when the boy was eating peanuts in the car and suddenly developed a major coughing episode. But since the

coughing finally subsided, the mother did not ascribe any relevancy to it, and therefore did not mention it to the family pediatrician.

With this new information we then decided to perform a chest x-ray, which revealed a complete atelectasis of the upper right lobe. (See Fig. 1), confirming the diminished breath sounds on auscultation.

Although not the typical location for aspiration, in combination with the history, the radiologic finding was conclusive enough for the working diagnosis of FBA.

For capacity reasons we transferred the patient to another university hospital where the culprit—a peanut—was extracted via rigid bronchoscopy from the upper right bronchus.

The further clinical course was unremarkable. In an immediate post-intervention x-ray, the atelectasis was still visible (see Fig. 2.), while no other cause for obstruction was found during bronchoscopy.

Under continuing antibiotic therapy, the infection parameters, the clinical signs and symptoms subsided and the boy made a full recovery. Because of the unequivocal clinical improvements, a third radiologic exposure of the patient was not deemed necessary or appropriate.

Discussion

Foreign body aspiration is a frequent occurrence and prompt diagnosis is important to avoid possible serious complications such as pneumonia, atelectasis or bronchiectasis. The most important elements in diagnosing FBA are clinical awareness, thorough clinical examination and adequate history taking. In conclusion, when having a high level of clinical suspicion and when the history corresponds to clinical findings, the appropriate next step is bronchoscopy, both for a final confirmation of the diagnosis and also for optimal treatment.

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