CASE REPORT

Occult foreign body in the lung mimicking bronchogenic carcinoma

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Accepted 28 November 2014

SUMMARY

Undiagnosed and retained foreign bodies in lungs may result in serious complications such as pneumonia, atelectasis or bronchiectasis. We describe a clinical scenario of chronic and recurrent cough in a 41-year-old woman with no comorbidities. Her chest CT scan was suggestive of a mass lesion in the right main bronchus. Bronchoscopic examination showed no growth; instead, note was made of a plastic foreign body. The foreign body was retracted using a rigid Bronchoscope. The patient admitted unintentionally aspirating this plastic object when she was in her early 20s but denied any serious respiratory complication at that time or later. However, she was admitted 6 years prior to current presentation with pneumonia and discharged home following parenteral antibiotic therapy. On retrieval of the foreign body her clinical condition improved and she has been following up at our clinic for the past 2 years.

BACKGROUND

The reason we thought of writing this case was

1. Foreign body aspiration (FBA) is uncommon among healthy adults;
2. Chronic cough must be evaluated fully.

CASE PRESENTATION

A healthy 41-year-old woman presented with a history of chronic and recurrent cough of 6 years duration to our clinic at King Abdul Aziz specialist hospital Taif, in the western region of Saudi Arabia. She described acute exacerbation of cough associated with low-grade fever for the past 2 weeks. She had a productive cough generating 1/2 to 1 cup of odourless sputum daily. She denied any postural relation to the cough, however, she did describe a pleuritic chest pain on the right side of her chest for the past 2 weeks. There was a history of similar illness 6 years prior to her current presentation and she had been managed as community acquired pneumonia with parenteral antibiotics in a local hospital. The patient denied any history of shortness of breath, wheezing, haemoptysis or weight loss over these years. On physical examination the patient was conscious, oriented, haemodynamically stable and was maintaining her oxygen saturation on room air. She had a body mass index of 33 kg/m². Chest examination showed decreased chest expansion on the right side. Percussion note was impaired in the right infra scapular region. On auscultation, bronchial breathing and coarse crackles were heard in the same area. Apart from these clinical signs the patient's systemic examination was unremarkable. Laboratory tests including

complete blood count, erythrocyte sedimentation rate chemistry and arterial blood gas were within normal limits. Sputum cultures grew mixed flora of bacteria and no fungal growth was observed. The patient was started on broad spectrum antibiotics and a chest CT scan was performed (figure 1), which showed proximal mass engulfing bronchus intermedius with eccentric calcification. Bronchiectatic dilations along with peribronchial thickness and segmental pneumonic consolidations on the right lower lobe revealed non-homogeneous opacity on the right lower lobe. The spirometric examination was normal. The patient underwent flexible bronchoscopic examination, which revealed an inflamed tracheal mucosa. There was no evidence of a mass lesion, however, the mucosa was fragile and was bleeding on touch. Note was made of a plastic foreign body (FB) visualised in the right lower lobe segment (figure 2). The FB was impacted hence a rigid bronchoscope was used. The 3 cm plastic FB (figure 3) was retrieved under general anaesthesia without complications. On repeated questioning, the patient admitted to unintentionally aspirating a FB when she was in her early 20s. After the procedure the patient was continued on broad spectrum antibiotics and was discharged home 7 days later. Her follow-up examination was normal. She was afebrile and her cough had markedly reduced. The colour of her sputum had changed from yellow to white.

A follow-up chest X-ray showed marked decrease in opacity of the right lower lobe and a repeat chest CT scan after 5 months (figure 4) showed almost resolution of the primary lesion with minimal bronchiectatic changes. The patient has been following up at our clinic for the past 2 years and is doing well.

Figure 1 Chest CT scan showing right bronchus mass lesion.

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To cite: Alharthi BJ, Masoodi I, Almourgi MA, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2014-207438

Figure 2 Bronchoscopic view of the foreign body in the right main bronchus.

INVESTIGATIONS

1. Chest CT scan ([figure 1](#)) showed a proximal mass engulfing the bronchus intermedius with eccentric calcification. Bronchiectatic dilations along with peribronchial thickening and segmental pneumonic consolidation on the right lower lobe, non-homogeneous opacity on the right lower lobe.
2. Spirometry was normal.

TREATMENT

Rigid bronchoscopy was performed under general anaesthesia and the FB was retracted.

OUTCOME AND FOLLOW-UP

After retraction of the FB from the right bronchus the patient's clinical condition improved and she has been following up at our clinic for the past 2 years.

DISCUSSION

The patient presented with radiological evidence of a lung mass; however, after bronchoscopic examination she proved to

Figure 3 The foreign body removed.

Figure 4 Follow-up chest CT scan showing resolution of mass lesion with minimal bronchiectasis.

have a plastic foreign body in the bronchus, which was retrieved under general anaesthesia using a rigid bronchoscope. On repeated questioning she admitted to FBA in her 20s, which she had forgotten as she had no acute symptoms at that time. FBA is more common among children. In adults, FBA accounts for 20% of reported cases of aspiration complications. Baharloo *et al*¹ compared clinical outcome and management of FBA among 28 adults and 84 children over a period of 20 years in a retrospective design. The authors observed that the peak incidence of FBA occurred during the second year of life among children whereas in the adult group it was during the sixth decade. The symptoms were similar in both groups but the diagnosis was often delayed in adults. Authors observed that foreign bodies more often lodged in the right bronchial tree, as in our patient's case. Atelectasis was commonly seen in adults whereas air trapping was seen more in children. The risk is higher in older people probably because of a higher prevalence of age-associated degenerative neurological and cerebrovascular disorders that predispose to dysphagia and/or impaired cough reflex.¹ The major causes of FBA in adults are altered mental status due to heavy alcohol intake or sedative use. The index case had neither any comorbidity nor any known predisposing factor. She also denied any history of choking at the time of aspiration. Patients who develop choking acutely after an incident present urgently whereas in patients without acute symptoms the FB may remain occult, as in this case. In order to determine the natural history of FBA, RS Lan² retrospectively studied 47 adult cases of FBA and divided them into two groups, an acute group and a chronic group, based on time duration of presentation. In the chronic group, the mean duration of the lodging of a FB was 25.8 months. The diagnosis was delayed due to the absence of a choking history at the time of the incident and invisibility of the FB on chest films. In Lans' series, the FB was removed with a fiberoptic bronchoscope in over 90% of patients. The author was of the opinion that the most important diagnostic factor is a high clinical index of suspicion and that flexible fiberoptic bronchoscopy provides a valuable therapeutic option in selected conditions. The index case, however, presented nearly 20 years after the incident, and during that time she had recurrent cough that once required hospitalisation for the treatment of pneumonia. Inorganic foreign bodies, as in the index case, are known to cause fewer

secondary infections compared to organic foreign bodies.^{1 3} The time elapsed between aspiration and presentation is very crucial, and determines the complication rates in a given case. Karakoç *et al*³ reviewed 174 cases of FBA, and studied the clinical course and complication rates in this cohort. In their study, cough, recurrent pneumonia and fever were the most common symptoms. Bronchiectasis was a major complication and was observed in 25% of patients in their series. This complication was seen when diagnosis was delayed by more than 30 days. The authors concluded that timely diagnosis and appropriate treatment of FBA is important to prevent long-term complications in affected children. The index case had minimal bronchiectasis, as was demonstrated on the follow-up chest CT scan (figure 4), however, keeping in view the resolution of symptoms, no lobectomy was planned. Occult foreign bodies can remain undetected anywhere from months to years and are often misdiagnosed. FBA can remain a diagnostic dilemma in cases where acute symptoms such as choking are not present or where the patient is unaware of the FBA, as in this index case. There are reports of patients with FBA having been misdiagnosed as asthma or even tuberculosis.⁴ FBs can predispose to various superadded bacterial or fungal infections and subsequent consequences can follow. While the index case had no superimposed fungal infection, FB-induced endobronchial actinomycosis mimicking bronchogenic carcinoma has been reported earlier by Kim *et al*.⁵ In their case, a fish bone was successfully removed by bronchoscopy after initial management with penicillin in a 69-year-old man who had presented with lung mass; in that case, the biopsy had shown actinomycosis. The FB may remain radiologically silent, as in the index case, or may have varied radiological presentation. Oka *et al*⁶ described recurrent haemoptysis in 61-year-old woman with radiological evidence of a peripheral nodule. It was only after surgical removal of the nodule that a 'white cedar' FB was discovered. On the other hand, an underlying embryological malformation, especially among children, may mimic the clinical evidence of FBA. A report of a bronchial cyst mimicking FBA was described by Ozkan *et al*.⁷ The management of FBA is bronchoscopic removal, and the expertise of the bronchoscopist determines the ease with which an FB is removed. We attempted retrieval of the FB with a flexible scope but since it was adherent and bleeding to the touch a rigid scope was used under anaesthesia and the FB was retrieved. With increasing experience and development of better accessories, removal using a flexible bronchoscope under local anaesthesia can be performed safely and successfully. However, a rigid scope may still be preferred under anaesthesia, especially when patients are not cooperative and in young patients or if the FB is stuck, as in the index case. Rafanan *et al*⁸ reviewed a large series of FB removal in a tertiary care centre and observed that there was a success rate of 86% in

more than 400 procedures with flexible bronchoscopy. Surgery is indicated when repeated bronchoscopic attempts fail. Thoracotomy with pulmonary resection is usually reserved for cases of destroyed segment, lobe or lung.^{9 10}

To conclude, the current case shows the importance of suspecting tracheobronchial FBA in the differential diagnosis of radiographic lesions or unexplained chronic respiratory symptoms and emphasises the importance of detailed history-taking and urgent management.

Learning points

- ▶ An occult foreign body, though rare, can be the cause of prolonged lung infection.
- ▶ Foreign body aspiration (FBA) is more common in children and in adults with neurological disease. However, this case highlights FBA in a person with no comorbidities.
- ▶ Careful history-taking is one of the most important steps in clinical management of FBA.

Contributors BJA first saw the patient, performed the bronchoscopy. IM wrote the report, revised and edited the manuscript. MAA, CVTS surgeon, removed the foreign body by rigid bronchoscope. SA was the resident in charge. All authors helped in writing the manuscript.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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