

Foreign body aspiration

Aspiration

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Abstract

Bronchoscopic evaluation was performed on the patient who applied to Bolu Abant İzzet Baysal University Chest Diseases Clinic and could not achieve clinical and radiological improvement with antibiotic treatment. During bronchoscopy, the middle lobe of the right lung was observed to be approximately 30% occluded. Since the suspicion of aspiration could not be excluded, thoracic surgery consultation was requested and rigid bronchoscopy was performed. Chicken bone was removed from the right main bronchus. In our case, the aspirated chicken bone did not cause serious respiratory distress because it did not completely obstruct the right main bronchus, but it did lead to chronic respiratory tract infection. Definitive diagnosis of foreign body aspirations is made by bronchoscopy. One of the most important criteria for the indication of bronchoscopy is clinical suspicion.

Keywords

Aspiration, Bronchoscopy, Chicken Bone

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Introduction

Foreign body aspirations (FBA) are typically observed in children and are often associated with acute respiratory distress, although they can sometimes remain asymptomatic. In adults, FBA is rare. Symptoms in adults may include severe coughing, chest pain, and shortness of breath, but cases can also be asymptomatic. Initially, silent cases may later manifest as a clinical picture involving persistent lung infections, bronchiectasis, or lung abscess.

Case Report

A 57 years old male patient presented with a one-month history of cough and yellowish sputum. He was admitted for further investigation. It was revealed that his symptoms did not improve despite receiving pneumonia treatment at an external center. The patient, who had refused bronchoscopy at the external center, underwent a sputum culture and a fungal culture for three days. Increased bilateral rales were heard on auscultation, particularly on the right side. A chest CT was requested, revealing a hyperdense appearance consistent with a foreign body in the right intermediate bronchus and accompanying bilateral consolidated areas.

The patient and his family were informed about the possibility of a foreign body, bronchoscopy consent was obtained, and the procedure was scheduled. During bronchoscopy, all lobes and segments of the left lung were clear, while the right intermediate bronchus was almost completely obliterated by vegetative lesions. Multiple forceps biopsies, brush biopsies, and lavage were performed from this area, and the obtained materials were sent for cytology, microbiology, and pathology. As the suspicion of aspiration could not be ruled out, consultation with thoracic surgery was sought, and rigid bronchoscopy was performed. A chicken bone was extracted from the right intermediate bronchus. The patient's symptoms improved after the procedure, and he was discharged.

Discussion

Tracheobronchial foreign body aspirations (FBA) are more common in the pediatric age group but can also occur in adults. In adults, FBA is often observed in the 6th and 7th decades of life when protective airway mechanisms may decrease [2, 3, 4]. Diagnosis is typically based on detailed history, physical examination, and, in most cases, the results of radiological findings. However, there are situations where radiological findings may not provide clear guidance. Common symptoms in adults include severe coughing, chest pain, shortness of breath, and cyanosis [3, 5]. However, depending on the type, size, and location of the foreign body, there may be no symptoms, or it can lead to severe respiratory distress. Late complications may include lung abscess, atelectasis, obstructive pneumonia, bronchiectasis, empyema, bronchopleural fistula, pneumothorax, and esophageal erosion [2, 3]. In our case, the aspirated chicken bone did not completely obstruct the right intermediate bronchus, thus not causing severe respiratory distress but leading to chronic respiratory tract infection.

Sometimes, a foreign body may remain asymptomatic for an extended period. The longest reported duration for a foreign body to remain in the tracheobronchial tree is 40 years[6].



Figure 1. Macroscopic view of the chicken bone removed from our patient following rigid bronchoscopy.



Figure 2. Macroscopic view of the chicken bone removed from our patient following rigid bronchoscopy.

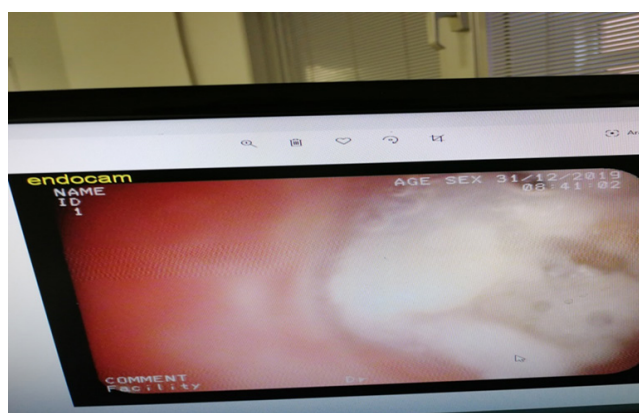


Figure 3. Appearance of the chicken bone during flexible bronchoscopy.

When suspecting foreign body aspiration, posterior-anterior and lateral chest X-rays, along with physical examination, are essential. However, chest X-rays may not always lead to a conclusive diagnosis. If the aspirated foreign body is radiopaque, it can be easily visualized on chest X-rays. Secondary radiological findings include air trapping on chest X-rays taken after postobstructive atelectasis or expiration. In adults, aspiration often occurs in the right hemithorax, whereas in the 0–15 age group, both hemithoraxes are equally affected [6, 7]. In all cases where there is suspicion of foreign body aspiration, the most appropriate treatment is the removal of the foreign body under general anesthesia through rigid bronchoscopy [7]. This method is generally safe for extracting foreign bodies from the airways. However, in cases where a significant amount of time has passed since the aspiration, the procedure may be more challenging due to the fibrotic parenchymal tissue that has developed in the surrounding area. For sharp and pointed foreign bodies, manipulations during bronchoscopy should be performed carefully, considering the possibility of peripheral migration. If foreign bodies in peripheral bronchi cannot be reached with rigid bronchoscopy or in patients with restricted neck movement due to cervicofacial or maxillofacial pathology, fiberoptic bronchoscopy (FOB) may be preferred. In our case, as the foreign body was not described in the patient history, attempts were made to biopsy the dark-colored lesion during the FOB procedure, and its rigidity was noticed at that time, leading to the suspicion of a foreign body.

After the removal of the foreign body, patients should be observed for some time for hemoptysis and subglottic edema. In cases where the foreign body cannot be removed during the first bronchoscopy session, the procedure may be repeated 2–3 times. If unsuccessful, the patient may be referred for thoracotomy [1, 8]. Due to diagnostic delays, if a foreign body remains in the lung for an extended period, irreversible damage such as bronchiectasis, obstructive emphysema, recurrent pneumonia, bronchial stenosis, lung abscess, pleural effusion, empyema, bronchopleural fistula, endobronchial polyp, and rib osteomyelitis may develop [7, 8].

In a study by Şenaylı and colleagues in Turkey, which aimed to examine foreign body aspirations and determine the overall situation, 14 articles were retrospectively analyzed. From 1973 to 2007, 6633 patients were investigated for foreign body aspiration, and foreign bodies were found in 5014 patients. In cases of unsuccessful bronchoscopies, 46 thoracotomies were performed, and 9 tracheotomies, 4 pneumothoraces, and 7 cardiac arrests were reported. The most commonly encountered foreign bodies were identified as seeds and needles [9]. Delayed foreign body aspirations can lead to irreversible damage in the lungs and bronchi, and situations requiring pulmonary resection may arise. In a series of 23 cases treated surgically due to delayed foreign body aspiration, Duan and colleagues reported that they were able to remove the foreign body with bronchotomy in six cases and that lung resection was required in 17 cases [10]. Foreign body aspiration may be more common in adults with neurological diseases, alcohol and sedative drug use, epileptic seizures, facial trauma, and those undergoing general anesthesia[6].

Conclusion

The definitive diagnosis of foreign body aspirations is typically made through bronchoscopy. One of the most crucial criteria for indicating bronchoscopy is to have clinical suspicion. Anamnesis, physical examination, and radiological evaluations are usually sufficient to suspect foreign body aspiration. However, in cases where no clinical findings or history are detected but there are lung issues, considering foreign body aspiration may still necessitate the indication for bronchoscopy. If successful removal of the foreign body cannot be achieved through bronchoscopy, surgical procedures should be considered.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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