

## Case Report

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# Thoracotomy for Extracting Grass Inflorescence Aspiration: a Case Report

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Following aspiration of grass inflorescence, it often migrates to the peripheral part of the airway due to its unique shape. It often causes complications like chronic pneumonia, recurrent asthmatic attacks, lung abscess, recurrent hemoptysis, and bronchiectasis that may necessitate surgical intervention. In this case, we have reported a 13-year-old boy with grass inflorescence aspiration. The bronchoscopic procedure failed to remove the foreign body, so he underwent thoracotomy.

**Key words:** Foreign body aspiration; Grass inflorescence

## INTRODUCTION

Aspiration of a foreign body into a tracheobronchial tree may produce severe signs and symptoms such as acute dyspnea, asphyxia, hemoptysis, pneumothorax, laryngeal edema, and even cardiac arrest (1). Detailed history is significant for diagnosis. (2,3) Based on the unique shape of inflorescences in wheat, barley, rice, and timothy grass, they are called spikes. Wheat spikes can migrate to the periphery of the lung and even penetrate the lung parenchyma, the pleural layers, and the intercostal muscles and stick out beneath the skin of the chest wall. Sometimes it does not produce acute symptoms because of its particular structure. (4) This type of aspiration is not common, and, in most cases, it is challenging to diagnose and remove them from the respiratory system with a bronchoscope. In this case-report we present an unusual feature of the airways foreign-body aspiration.

## CASE SUMMARIES

A 13-year-old boy was admitted with a history of cough and sputum for the past three months. He mentioned that he had wheat spikes between his teeth and following a deep breath, wheat spike was aspirated, and symptoms like cough and asphyxia occurred. He had chronic cough for three months, and so he was admitted to a health center. According to his history and suspicion of foreign body aspiration, he underwent fiberoptic bronchoscopy. During bronchoscopy, a foreign herbal body was observed in the bronchus of the right lower lobe. Bronchial mucosa was severely inflamed, and extraction was unsuccessful due to profuse bleeding. The patient was then referred to the thoracic surgery ward. After a chest X-ray and chest CT scan (Figure 1), he underwent rigid bronchoscopy. During bronchoscopy, the foreign herbal body was found in the right lower lobe, and a large

amount of granulation tissue had formed around it. The extraction procedure caused perfused bleeding similar to the first bronchoscopy session. When the foreign body was grasped with the forceps, it did not move, and so could not be extracted. Following this procedure, thoracotomy was chosen for the next step. During thoracotomy, there was an inflammatory mass in the periphery of the lung. The inflammatory area in the right lung periphery was opened with electrocautery. A 2×2 cm cavity was entered which was full of pus, and stalk of the wheat spike was seen on the floor which was pulled out quickly (Figure 2).

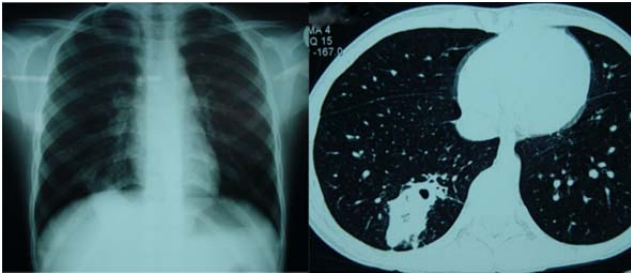


Figure 1. Chest X-ray and CT scan of patient



Figure 2. Extracted Wheat spike by thoracotomy

The cavity was irrigated and the bronchial opening in the floor was repaired by 3.0 silk.

After insertion of a 28F chest tube, the incision was closed. After surgery, a broad spectrum antibiotic was administered for the patient and after a week the chest tube was removed, and he was discharged with good general condition. In the follow-up visits, he had mild hemoptysis as bloody streak sputum during the first year after surgery. In the CT scan, there was limited bronchiectasis in the foreign body area. This condition

resolved with conservative therapy, and there was no need for more action.

## DISCUSSION

Aspiration of a foreign body is common in the first three years of life. The second higher incidence is between 10 and 11 years. A detailed history is essential for diagnosis (2).

Morbidities depend on the shape and type of foreign body. The arrangement of the flowers on the plants is called inflorescence. One particular type is called a spike. In spike, flowers develop directly from the stem. Inflorescence of some plants like wheat, barley, timothy grass, oat, and rice are spike shaped (Figure 3).



Figure 3. Wheat spike

Wheat spikes and other plants are uncommon foreign bodies in aspiration. The signs depend on the shape and plant trait (5). If the inflorescence spike is hard and does not get soft after aspiration, it will stick in the bronchial tree. This event may lead to two major conditions that depend on the heading of the spikes. The spike may be parallel to the bronchial system and thus it will stick in it, or it may be antiparallel to the bronchial system; in this situation wheat spikes will migrate to the distal portion (6).

Delayed diagnosis may lead to severe complications like pneumonia, hemoptysis, and asthma. Treatment of

asthma and pneumonia may alleviate patient symptoms, but it does not affect the disease's primary cause. Bronchoscopy is the main diagnostic and therapeutic procedure for foreign body aspiration.

These patients often have cough and atelectasis or obstructive emphysema with heart shift, and elevated diaphragm may be seen in a chest x-ray.

According to our knowledge, the first reported case of grass inflorescence aspiration in the English language was in 1957. Godfrey and Adelaide reported this case (5). After this report, there is a limited number of case reports in medical literature.

In a case that was reported by Karagöz et al., a 9-year-old boy aspirated wheat spike. He had no symptoms like cough or respiratory distress. He had only 39°C fever during his first admission at the hospital. The foreign body showed up by penetrating and making abscess in the posterior wall of the thorax (2).

Oka et al. presented a 61 year old woman who had fever and hemoptysis. On further investigations, they found a nodule in the left lower lobe in the CT scan. The patient underwent segmentectomy with doubt about inflammatory tumors. After surgery, pathologic investigation demonstrated a wheat spike (7).

Erol et al. reported a 19-year-old boy with fever, fatigue, and inflammation on his chest wall's left side. In radiographic finding, there was opacity with atelectasis in the left lower lobe. Final investigations with Tru-Cut biopsy detected fibrosis and lymphocytes. Few days after hospitalization, a foreign body exited from the airway following vigorous coughing. In pathologic investigations, a wheat spike was found (3).

In another case that was reported by Gonlugur et al., a patient presented with a history of pain on the left side of his chest for three months. He had cough for years and was treated with diagnosis of asthma and chronic bronchitis. In the CT scan, there was a tumor shaped view due to atelectasis or pneumonia. In diagnostic bronchoscopy, a detected foreign body was removed. The aspirated foreign body was a wheat spike. According to patient history, he was working on a wheat farm since 20 years ago (8).

Airway foreign body aspiration is not an uncommon accident in childhood and according to its shape and type, it can have a specific pathologic process. We can name some plants like wheat, barley, rye, timothy that have specific inflorescence that, according to their unique shape, can represent with special consequence. Delayed diagnosis can cause severe complications and difficulties in extraction with bronchoscopy as in our patient, so it is crucial to diagnose and treat the condition as soon as possible.

## REFERENCES

1. Nasr A, Forte V, Friedberg J, Langer JC. Successful bronchoscopic retrieval of Timothy grass from the airway. *J Pediatr Surg* 2005;40(4):E39-41.
2. Karagöz B, Köksal Y, Varan A, Halilolu M, Ekinci S, Büyükpamukçu M. An unusual case of grass inflorescence aspiration presenting as a chest wall tumour. *Pediatr Radiol* 2006;36(5):434-6.
3. Erol Y, Ergönül AG, Turhan K, Çağırıcı U, Çakan A. Expectoration of Tracheobronchial Grass Inflorescence Mimicking a Chest Wall Tumor. *J Clin Anal Med* 2016;7(suppl 3): 282-4.
4. Choremis C, Theodorou S, Athanasiades T, Katerelos H. Spontaneous Elimination of Inhaled Grass Inflorescences Through The Lung and Chest Wall. *Arch Dis Child* 1964;39(206):406-8.
5. Godfrey RC. The behaviour of inhaled grass inflorescences. *Lancet* 1957;273(6989):273-4.
6. Bayram AS, Melek H, Coşkun F. A Case of Grass Inflorescence Aspiration: A Novel Route from the Mouth to the Chest Wall. *Respiratory Case Reports* 2017;6(3): 132-4.
7. Oka M, Fukuda M, Takatani H, Nakano R, Kohno S, Soda H. Chronic bronchial foreign body mimicking peripheral lung tumor. *Intern Med* 1996;35(3):219-21.
8. Gonlugur U, Karabacak E, Muratli A, Mirici A. A forgotten oat head aspiration in an adult patient. *Arch Med Sci* 2014;10(5):1066-7.