

A Bronchopleurocutaneous Fistula Caused by Unexpected Foreign Body Aspiration: False Barley (*Hordeum murinum*)

Serda Kanbur, MD, Serdar Evman, MD,
Talha Dogruyol, MD, and Irfan Yalcinkaya, MD

Department of Thoracic Surgery, Sureyyapasa Chest Disease and Thoracic Surgery Training and Research Hospital, Istanbul, Turkey

A 13-year-old boy with no previous history of foreign body aspiration, presenting with side pain, was referred to our clinic with a pneumonia diagnosis by an external medical facility where he had been started on antibiotic treatment. Consolidation in the right inferior lobe and minimal pleural effusion were found on the lung radiograph and computed tomography scan. Skin hyperemia and abscess formation in the right chest were observed subsequently. A drain was placed; bronchoscopy, sampling for cultures, and a biopsy were performed. Four months after this first episode ended with inconclusive results, the patient returned, reporting that a spike of grass was protruding from the continued abscess drainage. The skin lesion closed after emptying of the abscess cavity; a check-up bronchoscopy was unremarkable. The extrusion from the skin of the foreign body, a rare event in the published literature, was our first such case.

(Ann Thorac Surg 2015;100:e125–7)

© 2015 by The Society of Thoracic Surgeons

Foreign body aspiration is a significant health hazard during childhood. False barley (*Hordeum murinum*) is very rare among the observed aspirated tracheobronchial foreign bodies. The aspiration of false barley has an atypical clinical presentation; this grass is difficult to extract because of its progressive configuration, and presents an interesting clinical situation. Foreign body aspiration is reported to be among the most common causes of sudden and unexpected death in childhood [1, 2]. Complications may be acute, including asphyxia, hemoptysis, cough, respiratory failure, and acute infection, or chronic, such as bronchiectasis, abscess, and atelectasis due to recurrent infection [3]. This condition is seen especially in rural areas around the world, including Turkey. The migration of false barley from the tracheobronchial system to the chest wall, however, is a much more infrequent complication, published in only a few case reports [2–5].

A 13-year-old boy was seen for right-side chest pain exacerbated by respiratory excursions. The patient's

history and physical examination were both unremarkable except for a slight elevation of C-reactive protein and erythrocyte sedimentation rate. A chest radiograph showed infiltrates in the lower field of the right lung (Fig 1). A thoracic computed tomography scan, performed approximately 1 month before the patient came to us because of lack of response to pneumonia treatment based on the plain film x-ray, revealed a lung lesion with irregular contours in the posterobasal segment of the right lower lobe, extending to the posterior pleura, and an effusion as thick as 4 mm (Fig 2). Three different samples for acid-resistant bacilli were collected. A regular sputum culture and a tuberculosis culture were performed. The results being negative for acid-resistant bacilli, the patient was prescribed ampicillin and sulbactam, 50 mg/kg daily for 10 days.

The patient returned 10 days later with right paravertebral erythema, pain, swelling, and purulent discharge from the skin on the posterior axillar line at the T9 to T10 level. The fistula tract was widened locally. Sampling for cultures and a biopsy were obtained. No growth was observed in the cultures. The biopsy was interpreted as showing a nonspecific irritation. Fiberoptic bronchoscopy performed for suspected foreign body aspiration was unremarkable. No progression of the infiltrate was observed on the chest radiograph. Antibiotics effective against pneumococci and anaerobic agents were administered, and a drain was placed in the abscess. No additional follow-up was considered necessary as the drainage volume was reduced.

Approximately 4 months after the first presentation, the patient returned to our clinic reporting that a spike of grass was coming out of the site where the abscess was being drained. The grass was found to be half extruded from the drainage opening (Fig 3). A more detailed history indicated that approximately 5 months

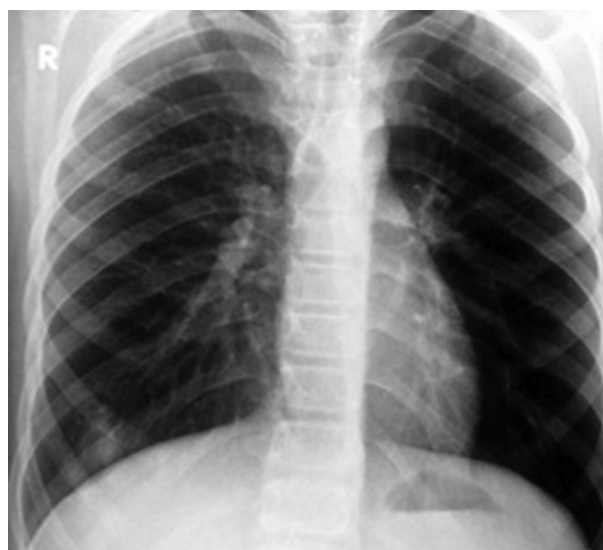


Fig 1. Patient's radiograph at first presentation, posteroanterior projection.

Accepted for publication July 9, 2015.

Address correspondence to Dr Dogruyol, Department of Thoracic Surgery, Sureyyapasa Chest Disease and Thoracic Surgery Training and Research Hospital, Basibuyuk, Maltepe, Istanbul, Turkey; e-mail: talhadogruyol@yahoo.com.tr.



Fig 2. Computed tomography scan performed at first presentation.

earlier, the patient thought he had swallowed a spike of grass while playing with it; he had not reported it owing to fear of his parents. The foreign body was excised with its surrounding tissue. A bronchoscopy was also performed. The bronchial tissue was found to be normal. No additional symptoms, in particular, no hemoptysis, were seen during this time. The patient's skin lesion healed gradually, as did the clinical and radiologic picture (Fig 4).



Fig 3. Appearance of the foreign body protruding from the fistula tract.

Comment

Although more frequent in childhood, tracheobronchial foreign body aspiration can also occur with adults. The most frequent foreign bodies aspirated by children are nuts with shells and small toys; among adults, especially women, pins used to attach a head scarf are the most commonly aspirated objects. After aspiration of the foreign body, a clinical picture including choking attacks, coughing, wheezing, asphyxia, and sudden death may be observed during the acute period in a significant number of patients.

The grass *Hordeum murinum* is very rarely aspirated as a foreign body, and is seen mainly among children living in rural areas. *Hordeum murinum* is a stringy herb with a tissue penetration power rarely seen among aspirated foreign bodies. Publications variously report this foreign body as "spike of wild barley," "grass inflorescence," "*Hordeum pusillum*," "grain spike," or "cheat grass" [4, 5]. Children are known to be attracted to playing with this grass because of its structure that allows it to progress on flat ground. It is more easily aspirated when the play involves making the grass move on the child's tongue. Reports of cases with airway obstruction, massive hemoptysis, bronchiectasis, cavity formation, lung abscess, and complications of foreign object migration involving this grass have been published [6]. In a few rare cases, the migration of a foreign body, passing through the pleural cavity and exiting the thoracic wall, has been reported [7]. The possibility of a migrating foreign body, especially *Hordeum murinum*, should be kept in mind in cases of chest wall inflammation or suspected tumoral mass associated with consolidation in lung bases and pleural effusion, even in the absence of a history of aspiration. The absence of an initial history of aspiration may be seen as positive, as it avoids a thoracotomy. Conversely, the patient's failure to report the aspiration might have led in this case to massive hemoptysis while being treated with antibiotics and drainage only, endangering his life in the

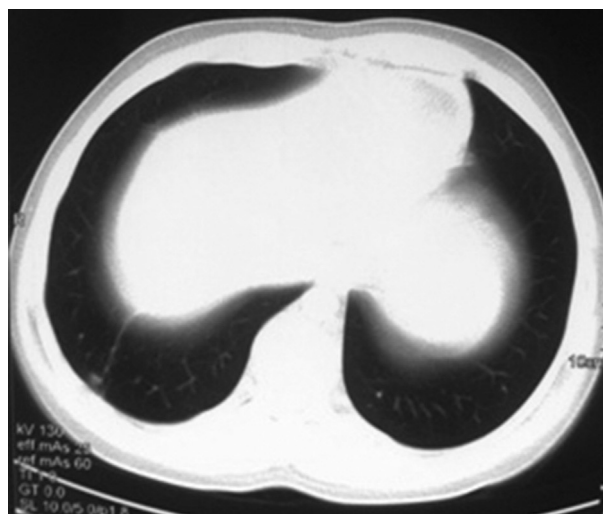


Fig 4. Computed tomography scan performed approximately 1 month after removal of the foreign body.

absence of timely intervention. Considering these possible complications, we may consider our patient to have been lucky.

To conclude, this grass is rarely the foreign body in an foreign body aspiration. With or without a history of aspiration, the diagnosis may be missed even with bronchoscopy and chest radiography examinations. Computed tomography imaging may be useful in the early diagnosis of false barley aspiration.

References

1. Metrangola S, Monetti C, Meneghini L, Zarda N, Giusti F. Eight years experience with foreign-body aspiration in children: what is really important for a timely diagnosis? *J Pediatr Surg* 1999;34:1229–31.
2. Brkic F, Dedic SD, Hajdarovic D. Broncoscopic removal of foreign bodies from children in Bosnia and Herzegovina: experience with 230 patients. *Int J Pediatr Otorhinolaryngol* 2001;60:193–6.
3. Kim IG, Brummit WM, Humphry A, et al. Foreign body in the airways: a review of 202 cases. *Laryngoscope* 1973;83:347.
4. Dindar H, Konkan R, Cakmak M, et al. Bronchopleurocutaneous fistula caused by an unusual foreign body aspiration simulating acute abdomen. *Eur J Pediatr* 1994;153:136–7.
5. Hammer J. Acquired upper airway obstruction. *Pediatr Respir Rev* 2004;5:25–33.
6. Hilman BC, Kurzweg FT, McCook WW, et al. Foreign body aspiration of grass inflorescences as a cause of hemoptysis. *Chest* 1980;78:2.
7. Basok O, Yaldiz S, Kilincer L. Bronchiectasis resulting from aspirated grass inflorescences. *Scand Cardiovasc J* 1997;31:157–9.