

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/radcr

Case Report

Chronic cough and noisy breathing: An 11-year journey to diagnosis and successful treatment ☆☆☆

Sibtain M Moledina^{a,*}, Elizabeth Kwiyochea^a, Diana Isingo^a, Pauline Chale^b, Mwanaada Kilima^b, Luth Mwapule^b, Alex Masao^b, Jude Tarimo^b, Godfrey Chuwa^b, Joseph Duttu^b, Sylvia B. Nsato^c, Evans Liseki^d, Grace Shayo^a, Hedwiga F. Swai^b

^a Muhimbili University of Health and Allied Sciences, Dar es Salaam 65001, Tanzania

^b Department of Internal Medicine, Muhimbili National Hospital, Dar es Salaam 65000, Tanzania

^c Department of Radiology, Muhimbili National Hospital, Dar es Salaam 65000, Tanzania

^d Department of Internal Medicine, Bugando Medical Centre, Mwanza 1370, Tanzania

ARTICLE INFO

Article history:

Received 11 June 2024

Accepted 4 July 2024

Keywords:

Chronic cough

Foreign body

Bronchoscopy

ABSTRACT

Foreign body aspiration in an uncommon entity in adults which often leads to delays in diagnosis. Adults with long-standing foreign bodies in the airway can result in various complications including bronchiectasis, atelectasis and lung fibrosis. We describe the case of a primary school teacher who was diagnosed with foreign body aspiration 11 years after the aspiration event. Delays in diagnosis led to her receiving multiple doses of antibiotics including a course of antituberculous therapy.

© 2024 The Authors. Published by Elsevier Inc. on behalf of University of Washington.

This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

Introduction

Eighty percent of foreign body aspirations occur in children whereas in adults, foreign body aspiration is often associated with impairment of consciousness or swallowing [1]. Furthermore, adults are generally more aware of aspiration events and would present to the hospital early with a clear history which would facilitate early diagnosis and removal of the foreign body. The presentation of nonasphyxiating foreign body can vary from cough, hemoptysis, wheezing to recurrent

pneumonia and atelectasis. We describe the case of a female in her 50s who aspirated a sweet shell 11 years prior to diagnosis, during which time she was treated at different hospitals without a clear diagnosis.

Case discussion

A primary school teacher in her 50s presented to our hospital at the infectious disease clinic with a chronic history of

☆ Competing Interests: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

☆☆ Acknowledgments: The authors would like to thank the patient and her guardian for her consent in publishing this case report. We would like to acknowledge the assistance of the multidisciplinary team involved in the care of this patient. No funding was received for this work.

* Corresponding author.

E-mail address: moledinasibtain@gmail.com (S. M Moledina).

<https://doi.org/10.1016/j.radcr.2024.07.019>

1930-0433/© 2024 The Authors. Published by Elsevier Inc. on behalf of University of Washington. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

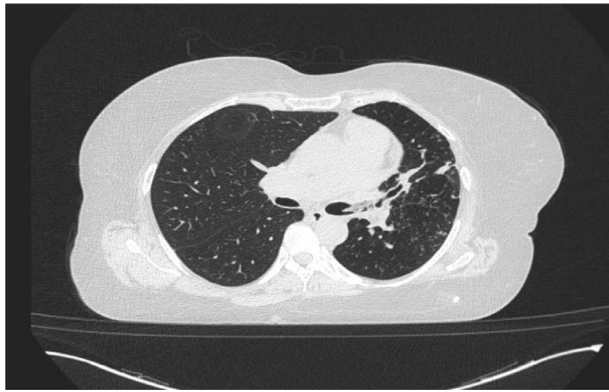


Fig. 1 – Fibrotic changes and scattered cavitation seen in the left apical region, reduced left lung volume with traction bronchiectasis. There were also small centrilobular nodules in a linear branching pattern in the left lung resembling tree in bud appearance suggestive for bronchiolitis.

shortness of breath, noisy breathing, chronic cough with foul smelling suppurative sputum. She had already received multiple courses of antibiotics prior to presenting to the clinic, including a course of anti-tuberculous therapy based on chest X-ray findings with negative sputum Gene Xpert for tuberculosis. On examination, she was in visible distress, tachypneic with respiratory rate of 28 breaths per minute, had an inspiratory stridor and fine crepitations over the left side of the chest.

An ear, nose, and throat (ENT) examination did not reveal any pathology and a diagnosis of bronchiectasis with possible bronchial stenosis secondary to previous tuberculosis infection was made i.e. post-TB lung disease. A CT of the chest revealed tree-in-bud pattern affecting the left lung suggestive of bronchiolitis (Fig. 1). Sputum analysis was negative for tuberculosis.

Flexible bronchoscopy was done in the bronchoscopy suite as an out-patient which showed a foreign body in the left main bronchus, around 2.5 cm distal to the carina, causing total occlusion with thick foul-smelling secretions and granulation tissue (Fig. 2). Bronchial toilet was done. The foreign body was successfully removed using a flexible bronchoscope with a forceps biopsy. Collapse of the left lower lobe orifices was noted.



Fig. 2 – Bronchoscopy image showing a foreign body in the left main bronchus.



Fig. 3 – Piece of sweet shell (plastic wrap) removed from the left main bronchus.

After the procedure, the patient confirmed that it was piece of plastic wrap from a sweet she had eaten 11 years prior (Fig. 3). She developed symptoms of cough 1 year after aspiration but never attributed it to the event nor mentioned the event to any of her previous physicians.

Bronchoalveolar lavage from the bronchoscopy revealed gram-positive cocci but negative culture results. *Mycobacterium tuberculosis* was not detected on Gene Xpert and cytology was negative for malignancy.

She was treated with amoxicillin-clavulanate, prednisolone, and advised to attend chest physiotherapy. A chest X-ray done few days later revealed reduced left lung volume with bronchiectasis and fibrotic changes in the left lung and small bullae in the left upper pole (Fig. 4).

Careful review of the initial CT scan images showed the presence of the foreign body in the left main stem bronchus with associated mucoid impaction in the left lower lobe (Fig. 5).

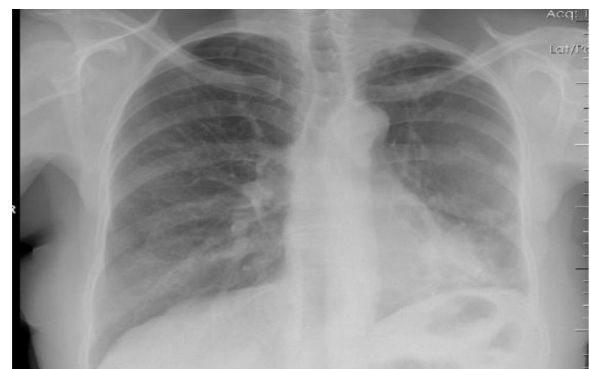


Fig. 4 – Chest-Xray after foreign body removal showing fibrosis, bronchiectasis and reduced left lung volume with few small bullae in upper pole.

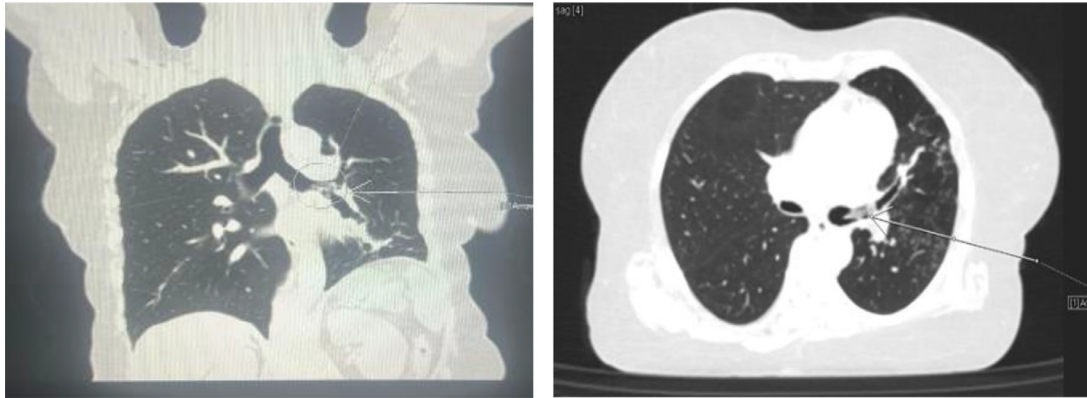


Fig. 5 – Review of the first CT scan images showed a high-density foreign body (approximately – 250 HU density) is seen in the left main bronchus, approximately about 2.86 cm distal to carina impacted at the bifurcation into the 2 lobar bronchi, the left upper and lower lobar bronchi. (black arrow). Furthermore, there was a hypodense opacity in the left lower lobe that was best seen in coronal views with classic finger in glove appearance which represents mucous filling dilated bronchi (20–28 HU density) consistent with mucoid impaction.

Discussion

Foreign body (FB) aspiration is an uncommon but potentially life-threatening event [2]. While the majority of accidental aspiration events occur in children, adults represent up to 25% of cases [3,4]. Adult FB aspiration typically presents with a choking event followed by persistent coughing but, not uncommonly, can mimic more chronic diseases such as COPD, asthma, and obstructive pneumonia when the initial event goes unnoticed [2,4–10]. When the diagnosis is not established immediately, retained FBs may lead to recurrent pneumonia, bronchiectasis, recurrent hemoptysis, pneumothorax, lung abscesses, pneumomediastinum, or other complication [1]. Our case complicated to bronchiectasis, atelectasis and lung fibrosis.

Our patient had aspirated a plastic wrap from a sweet 11 years prior, which can often lead to other diagnosis and treatment. Such significant delays in diagnosis have been previously described in literature. One case report described a patient who underwent flexible bronchoscopy and was discovered to have a bone fragment wedged in the bronchus for a duration of 22 years, which was successfully removed via rigid bronchoscope [11]. Another reported a foreign body (thorn) that was retained in the bronchus for 25 years which led to a diagnosis of asthma in the patient. She had evidence of obstruction on spirometry, a positive bronchodilator response, improvement of some symptoms on asthma-specific therapy, and aggravation of cough and wheeze with cold air and exercise [4]. Our patient developed chronic cough with foul smelling sputum, stridor and difficulty in breathing of which she was mistakenly treated as a case of pulmonary TB with no improvement.

Nonasphyxiating foreign-body aspiration in adults can be difficult to diagnose because the symptoms are nonspecific and chest X-rays may be normal due to organic composition of the foreign bodies. The diagnosis is often made via flex-

ible bronchoscopy [11]. Impaction in the trachea leads to a more dramatic presentation of inspiratory stridor with frequent coughing, while occlusion of the lower bronchi can result in coughing, wheezing, dyspnea, or hemoptysis, and may be mistaken for an alternative diagnosis [12].

In adults, the right lower lobe of the lung is the most common site of recurrent pneumonia in foreign body aspiration [13]. This is due to the fact that the anatomy of the right main bronchus is wider and steeper than that of the left main bronchus, allowing objects to enter more easily than the left side [13]. Contrastingly, the foreign body in our patient was lodged in the left main bronchus.

When dealing with longer-standing foreign bodies that induce formation of granulation tissue, case series report that the use of systemic glucocorticoids 12 h to 24 h before removal may aid in extraction by reducing inflammation [14]. In our case, steroids were not administered because the diagnosis of FB aspiration had not been confirmed before bronchoscopy.

Flexible bronchoscopy is increasingly used for the diagnosis and extraction of nonasphyxiating foreign bodies, which may be removed using forceps, snares, or baskets [15]. Flexible bronchoscopy is more accessible and less expensive, and general anesthetic is not required compared with rigid bronchoscopy. Rigid bronchoscopy remains the procedure of choice for asphyxiating foreign bodies because it offers superior airway control, suction, and extraction capabilities [15,16]. It also becomes the procedure of choice should significant hemorrhage occur during extraction because it is impossible to simultaneously suction and manipulate the object with flexible bronchoscopy. The potential for foreign body migration and subsequent asphyxiation should be considered before foreign body extraction using a flexible bronchoscope. We suggest that the ability to convert to rigid bronchoscopy in an emergency should be a consideration when planning procedures involving the removal of foreign bodies from the distal airways.

Conclusion

The diagnosis of foreign body aspiration should be considered in patients who present with nonresolving or recurrent pneumonia, atelectasis or unexplained bronchiectasis. Careful review of images is important and can aid in the early diagnosis of foreign body aspiration.

Data availability

The data supporting this case report are from previously reported studies, which have been cited.

Patient consent

Informed consent was obtained from the patient for publication of this case report.

REFERENCES

- [1] Limper AH, Prakash UBS. Tracheobronchial foreign bodies in adults. *Ann Intern Med* 1990;112(8):604–9. doi:[10.7326/0003-4819-112-8-604](https://doi.org/10.7326/0003-4819-112-8-604).
- [2] Bain A, Barthos A, Hoffstein V, Batt J. Foreign-body aspiration in the adult: presentation and management. *Can Respir J* 2013;20(6):e98–9. doi:[10.1155/2013/754121](https://doi.org/10.1155/2013/754121).
- [3] Sehgal IS, Dhooira S, Ram B, Singh N, Aggarwal AN, Gupta D, et al. Foreign body inhalation in the adult population: experience of 25,998 bronchoscopies and systematic review of the literature. *Respir Care* 2015;60(10):1438–48. doi:[10.4187/RESPCARE.03976](https://doi.org/10.4187/RESPCARE.03976).
- [4] Al-Majed SA, Ashour M, Al-Mobeireek AF, Al-Hajjaj MS, Alzeer AH, Al-Kattan K. Overlooked inhaled foreign bodies: late sequelae and the likelihood of recovery. *Respir Med* 1997;91(5):293–6. doi:[10.1016/S0954-6111\(97\)90033-0](https://doi.org/10.1016/S0954-6111(97)90033-0).
- [5] Baharloo F, Veyckemans F, Francis C, Bietlot MP. Tracheobronchial foreign bodies: presentation and management in children and adults. *Chest* 1999;115(5):1357–62. doi:[10.1378/CHEST.115.5.1357](https://doi.org/10.1378/CHEST.115.5.1357).
- [6] Hsu WC, Sheen TS, Lin CD, Tan CT, Yeh TH, Lee SY. Clinical experiences of removing foreign bodies in the airway and esophagus with a rigid endoscope: a series of 3217 cases from 1970 to 1996. *Otolaryngol Head Neck Surg* 2000;122(3):450–4. doi:[10.1016/S0194-5998\(00\)70063-5](https://doi.org/10.1016/S0194-5998(00)70063-5).
- [7] Boyd M, Watkins F, Singh S, Haponik E, Chatterjee A, Conforti J, et al. Prevalence of flexible bronchoscopic removal of foreign bodies in the advanced elderly. *Age Ageing* 2009;38(4):396–400. doi:[10.1093/AGEING/AF044](https://doi.org/10.1093/AGEING/AF044).
- [8] Dong YC, Zhou GW, Bai C, Huang HD, Sun QY, Huang Y, et al. Removal of tracheobronchial foreign bodies in adults using a flexible bronchoscope: experience with 200 cases in China. *Intern Med* 2012;51(18):2515–19. doi:[10.2169/INTERNALMEDICINE.51.7672](https://doi.org/10.2169/INTERNALMEDICINE.51.7672).
- [9] Lowe E, Soylu E, Deekonda P, Gajaweera H, Ioannidis D, Walker W, et al. Principal diagnostic features of paediatric foreign body aspiration. *Int J Pediatr Otorhinolaryngol* 2024;177:111846. doi:[10.1016/j.ijporel.2023.111846](https://doi.org/10.1016/j.ijporel.2023.111846).
- [10] Kothari H, Jawahar AP, Badheka A, Chegondi M. Coin aspiration presenting as chronic cough and tracheoesophageal fistula. *Cureus* 2023;15(12):e50283. doi:[10.7759/CUREUS.50283](https://doi.org/10.7759/CUREUS.50283).
- [11] Lin L, Lv L, Wang Y, Zha X, Tang F, Liu X. The clinical features of foreign body aspiration into the lower airway in geriatric patients. *Clin Interv Aging* 2014;9:1613–18. doi:[10.2147/CIA.S70924](https://doi.org/10.2147/CIA.S70924).
- [12] Dikensoy O, Usalan C, Filiz A. Foreign body aspiration: clinical utility of flexible bronchoscopy. *Postgrad Med J* 2002;78(921):399–403. doi:[10.1136/PMJ.78.921.399](https://doi.org/10.1136/PMJ.78.921.399).
- [13] Rovin JD, Rodgers BM. Pediatric foreign body aspiration. *Pediatr Rev* 2000;21(3):86–90. doi:[10.1542/PIR.21-3-86](https://doi.org/10.1542/PIR.21-3-86).
- [14] Banerjee A, Rao KS, Khanna SK, Narayanan PS, Gupta BK, Sekar JC, et al. Laryngo-tracheo-bronchial foreign bodies in children. *J Laryngol Otol* 1988;102(11):1029–32. doi:[10.1017/S0022215100107170](https://doi.org/10.1017/S0022215100107170).
- [15] Rafanan AL, Mehta AC. Adult airway foreign body removal. What's new? *Clin Chest Med* 2001;22(2):319–30. doi:[10.1016/S0272-5231\(05\)70046-0](https://doi.org/10.1016/S0272-5231(05)70046-0).
- [16] Li D, Yang N, Dong J, Wang J, Cui X, Yu H, et al. Comparison of rigid bronchoscopy and flexible bronchoscopy for the management of foreign body aspiration in children. *Am J Otolaryngol* 2024;45(2):104092. doi:[10.1016/j.amjoto.2023.104092](https://doi.org/10.1016/j.amjoto.2023.104092).