

# Letter to the Editor

## An unusual CT scan image

Dear Editor,

In the last years the flexible bronchoscope (FB) has replaced the rigid bronchoscope and has become the diagnostic procedure of choice for extraction of foreign bodies, an uncommon accident in adults.

We present a 64 year-old Caucasian male admitted to our Hospital with a six months history of chronic dry cough and recurrent pneumonia. A chest CT scan had previously been performed which showed an unusual pedunculated lesion in the right lower lobe (Figure 1), interpreted as a cancerous growth. However, the same lesion visualized by flexible bronchoscopy was identified as an aspirated cherry sized stone or so called foreign body aspiration (FBA), surrounded by airway oedema and granulation tissue (Figure 2). A Dormia basket was used in order to remove the FBA. The closed basket was positioned distally to the FBA, in such a way to permit anchoring and capturing of the FBA within the closing arms of the device. Once the FBA was captured, the basket was pulled back towards the FBA permitting its wedging between the top of the bronchoscope and the basket, and enabling the joint withdrawal of the bronchoscope and the Dormia basket (Figure 3).

Overall, death caused by suffocation following FBA is among the most common causes of mortality due to unintentional-injury in the United States. Suffocation by ingested objects has supplanted fires and burns as the fifth leading cause of death. Over 4100 fatal episodes of FBA were reported in the United States during 2002<sup>1</sup>. Nevertheless extraction of foreign body is uncommon in adults<sup>2</sup>.

The case reported of FBA in an adult, demonstrates the importance of flexible bronchoscopy allowing the removal of inhaled objects without needing for invasive thoracotomy. In the last years the rigid bronchoscope has been replaced by the FB which has become the diagnostic procedure of choice for FBA in adults and with the development of expertise and experience, FB has almost completely supplanted the rigid bronchoscope; 99% of all bronchoscopies in the US are performed with the FB<sup>3</sup>. According to our case load, the operator should be aware that even patients who are stable with regards to their respiratory status, may incur respiratory de-compensation during the diagnostic procedure, due to accidental dislodgement of the foreign body. Consequentially, FB should be performed in a room equipped for resuscitation, definitive airways management, and mechanical ventilation. FB can be performed under local anesthesia using intravenous sedation (midazolam 0, 3 mg/kg).

In adults, the clinical presentation of FBA is often subtle or silent while tracheobronchial FBA is uncommon in pediatric patients. Signs and symptoms of adult FBA are most often non specific<sup>4,5</sup>. Misdiagnosis and delay in diagnosis frequently occur. A missing or delayed diagnosis of FBA can cause respiratory problems including life-threatening airway obstruction, chronic wheezing mimicking asthma, chronic cough and recurrent pneumonia. Controversy



Figure 1.



Figure 2.



Figure 3.

regarding the need for corticosteroids or antibiotics in the peri-operative management of FBA results from the absence of comparative controlled studies on this issue. We recommend a short course of corticosteroids before removing a foreign body when the latter is encased in a bulky and bleeding granulation tissue. Prophylactic use of corticosteroids to decrease the incidence of post-operative sub glottic oedema should be avoided. When post operative sub-glottic oedema occurs, parenteral corticosteroids should be considered. In our institution we use with excellent results aerosolized adrenaline diluted 1:10.000 with saline solution. Antibiotics are recommended only in cases of clinical-radiological and bronchoscopical documented respiratory tract infection. Many types of ancillary equipment (including forceps, grasping claws, snares, balloon-tipped catheters, and magnets) have been developed to allow foreign body extraction using FB<sup>6,7,8</sup>.

In this case, we preferred the new available zero tip baskets developed for endobronchial use. These baskets facilitate foreign body extraction with FB and the success rates of foreign body extraction in adults range from 60 to 90%<sup>9,10</sup>. In adults and most children over age of 12, foreign body extraction can be performed under local anesthesia using appropriately designed forceps or snares and a 4, 9 mm (or greater) outer diameter FB. Once the foreign body is removed, the entire tracheo-bronchial tree should be checked for other foreign bodies or residual fragments. We agree with other experts that FB is superior to rigid bronchoscope in the setting of a distally wedged foreign body, in mechanically ventilated patients, or in the presence of spine, craniofacial, or skull fractures that prevent the manipulation required for a rigid bronchoscope<sup>9</sup>.

In summary, radiologic findings and especially CT scan features are helpful in extracting foreign bodies, however flexible bronchoscopy is the gold standard both in adults and in children over 12 yrs. An exclusion is aspiration of asphyxiating foreign bodies where rigid bronchoscopy is the preferred method for extraction. FB allows the removal of inhaled objects without incurring for invasive thoracotomy, which has led to a significant decrease in morbidity and mortality in the extraction of foreign bodies.

In these cases, the experience of the operator, and the improved instrumentation, has made the flexible bronchoscope a viable therapeutic alternative to the rigid bronchoscope for FBA removal. We report on a success rate of 86% performing FB in our institution, which concords with the data described in the literature<sup>11</sup>.

## References

- 1) NATIONAL SAFETY REPORT ON INJURIES IN AMERICA 2002. Information online: [www.nsc.org/report\\_injury\\_usa .htm](http://www.nsc.org/report_injury_usa.htm) (Accessed 5/3/05).
- 2) BAHARLOO F, VEYCKEMANS F FRANCIS C, BIETLOT MP, RODENSTEIN DO. Tracheobronchial foreign bodies: presentation and management in children and adults. *Chest* 1999; 115: 1357-1362.
- 3) PRAKASH UBS, COLT HG. The AAB bronchoscopy survey 1999: does it reveal anything new? *J Bronchol* 2000; 7: 1-3.
- 4) WOLKOVE N, KREISMAN H, COHEN C, FRANK H. Occult foreign – body aspiration in adults. *JAMA* 1982; 248: 1350-1352.
- 5) LAN RS. Non-asphyxiating tracheobronchial foreign bodies in adults. [comments] *Eur Respir J* 1994; 7: 510-514.
- 6) RAFANAN AL, METHA AC. Adult airways foreign body removal. What's new? *Clin Chest Med* 2001; 22: 319-330.
- 7) MAYR J, DITTRICH S, TRIEBL K. A new method for removal of metallic-ferromagnetic foreign bodies from the tracheobronchial tree. *Pediatr Surg Inter* 1997; 12: 461-462.
- 8) SAITO H, SAKA H, SAKAI S SHIMOKATA K. Removal of broken fragment of biopsy forceps with magnetic extractor. *Chest* 1989; 95: 700-701.
- 9) LIMPER AH, PRAKASH UBS. Tracheobronchial foreign bodies in adults. *Ann Int Med* 1990; 112: 604-609.
- 10) CHEN CH, LAI CL, TSAI TT, LEE YC, PERNG RP. Foreign body aspiration into lower airway in Chinese adults. *Chest* 1997; 112: 129-133.
- 11) RAFANAN AL. METHA AC. Bronchoscopy in foreign body removal. In: Wang KP, Metha AC, Turner J. *Flexible bronchoscopy* Blackwell Malden MA, USA 2004; pp. 197-209.

*R. Carbone, R. Filiberti, A. Monselise\*, P. Shah\*\**

University of Genoa, Genoa (Italy); \*University of Tel Aviv, Tel Aviv (Israel);  
\*\*Royal Brompton Hospital, Imperial College, London (United Kingdom)