Case Report

Tracheal foreign body – Importance of early diagnosis

Abstract

Foreign body aspiration is a common cause for a respiratory emergency in young children. It can be a life-threatening event if we don’t act quickly, especially, when foreign bodies are in larynx or trachea. The prevention of these children’s accidents and clinical suspect, are crucial, first to decreased their incidence and second to avoid the complications that may happen for delay in diagnosis.

We report a case of a child with incomplete tracheal obstruction after a sunflower seed aspiration with personal history of recurrent wheezing, which made diﬃcult the initial diagnosis, with complete resolution after removing it by rigid bronchoscopy. We highlight the importance of an exhaustive anamnesis in cases of bronchospasm and cough with poor outcome and the possibility that the chest X-ray may have no abnormalities despite having the foreign body (FB) into the larynx or trachea (and even bronchial), as well as the paper of ﬂexible bronchoscopy for diagnostic doubts or airways examination, and rigid bronchoscopy as the best technique for remove foreign bodies in children airways.

Introduction

The aspiration of FB in the pediatric may be an important health problem for the child, so an early diagnosis and treatment is necessary to avoid complications [1-3]. Of all the fatal accidents in children under 4 years of age, 7% are due to FB aspiration. This digit reaches 40% in children under 1 year [1-3]. In most of cases the object is usually displaced at the bronchial, the right main bronchus being the location most frequent, followed by the main bronchus left, secondary bronchi, carina and trachea. The percentage of cases with tracheal localization ranges from 3 to 13% according to different series [3]. The symptoms of the patient will depend on the location of the obstruction, size and material of the object aspirated but even in 1/3 of the cases we can ﬁnd a physical examination and normal chest radiography, so that diagnostic suspicion will be of vital importance for a diagnosis and early treatment thus avoiding the associated complications [4,5].

Clinical Case

3-year-old girl who is taken to the hospital’s emergency room due to odynophagia, cough and respiratory distress. As background, personal symptoms of wheezing recurrent without maintenance treatment. On auscultation, a mild bilateral vesicular murmur decrease was detected, with expiratory wheezing in both pulmonary fields and mild intercostal retraction. Nebulized salbutamol is administered with improvement of respiratory sounds and symptoms, keeping a saturation with normal ambient air. In base at this evolution, she is sent to home with salbutamol inhaled and starting of inhaled corticosteroids.

A week later, come again at emergency department after persisting cough and respiratory sounds, despite performing the treatment correctly. At auscultation presents good bilateral ventilation, with some wheezing disseminated by both pulmonary fields.

A new anamnesis is made afﬁrming the family that the cough has, sometimes, a diﬀerent sound to that presented in the previous bronchial pictures of the patient, sometimes adopting characteristics of a barking cough which increases when running. The medical team insists on the possibility of foreign body aspiration, remembering a relative that hours before the onset of symptoms, he had an episode of acute cough and cyanosis eating sunflower seeds.

Upon suspicion of foreign body aspiration it was decided to perform a chest x-ray, which is normal (Figure 1) and is entered to perform exploration endoscopic airway in collaboration with the Pediatric Pneumology Unit of our hospital is performed by ﬂexible optic bronchoscopy with 3.8 mm Olympus fibro scope, observing at the level of the tracheal carina a body strange suggestive sunflower pipe (Figure 2), which it displaces with the respiratory movements, without producing complete obstruction of the tracheal diameter. Then, it is extracted with rigid bronchoscope (Figure 3), revising later with ﬂexible
bronchoscope all the bronchial tree without finding evidence of injury in carina or another foreign body more distally.

After the extraction disappears tummy symptomatology and the auscultation is normalized. It is discharged to the 24 hours, monitoring a month in external consultations with auscultator normality.

**Discussion**

The aspiration of FB requires urgent medical attention [1-3]. One of the locations with the highest risk of vital commitment is the larynx and trachea, since complete obstructions can lead to suffocation, stop cardiorespiratory and even death, being between 0.4% to 1% mortality reflected by some bibliographic series [6,7], and recently documented a case of death in a patient of 2 years by asphyxia by salmon roe detected during the necropsy [8]. If the aspirated object not occluded by complete the tracheal orifice and there is no suspicion clear of the incident, as it happened in our case, the patient’s symptoms may be confused with processes asthmatics, pneumonias or laryngeal affectations [3].

The statistical data confirm that up to 80% of the aspirations of FB in USA occur in minors of 15 years, especially between 18 months and 3 years of age [9-11], being the most frequent objects of vegetable origin (nuts, pieces of fruit), pieces of meat, toys, buttons or lids of pens [1-3].

When the FB is in the laryngeal mucosa or tracheal, triggers a spasm that causes the appearance of productive cough in the patient to try it expulsion [3]. If you do not get the same or if the object is smaller, can continue to descend in the airway giving rise to variable symptoms depending on its location [12].

At the laryngeal-tracheal level, if the obstruction is complete, we will find signs of respiratory distress, cough persistent, two-phase stridor or print run, but if the object is in the trachea, the patient may present trachealis or the characteristic sign of “papirotazo” [13], where the shock of the FB against the trachea when breathing the patient causes a characteristic audible sound.

If the object impacts at the bronchial level we could appreciate the classic triad of cough, localized wheezing and selective pulmonary hypoventilation [1-3]. Nevertheless, on many occasions, the exploration is usually quite non-specific or even normal [3]. In other cases, the auscultation and the clinic are interpreted as the expected in those patients with a clinical history of recurrent wheezing and bronchial asthma [1-3]. In case of long time since the aspiration, we can find other symptoms such as fever or increase of respiratory secretions, suggestive of pneumonia [1-3].

Chest radiography is sensitive but not very specific [3]. Most FB are radiolucent and even in more than 25% of cases may be normal, therefore does not exclude the presence of FB in these patients [3]. Sometimes we can appreciate indirect signs such as unilateral hyperinflation (which is the most specific according to the bibliographic series), atelectasis or findings compatible with pneumonia [1]. X-ray on inspiration and expiration can be useful in cases where the object is located at the bronchial level, so that it can produce a valvular mechanism by observing an area of air trapping, which did not happen with our patient. It is not easy to obtain in children small the x-ray on expiration and in these cases, it could help to perform an X-ray in decubitus side. In case of air trapping, in decubitus (that is, where the child is supported), we would observe that the lung does not empty as it should occur normally, and it would be the equivalent of entrapment air in the expiration.

The possibility of finding an exploration and tests complementary negatives lead to reaffirm the importance of a detailed clinical history, making special emphasis on a possible crisis of asphyxia suffered during the previous hours or days by the patient, such as reflected in numerous reviews granting a sensitivity of up to 79% [11,14], and the need to return to make a more detailed and accurate clinical history at the family before a respiratory picture of bad evolution.
If there is doubt about the situation or existence from the FB initially a flexible bronchoscopy is performed, to locate it and determine the state of the airway [1–3]. This exploration, although in some cases has also been used successfully for extraction, mainly before inorganic objects [2,4,15,16], we believe which is not the most suitable for foreign bodies respiratory diseases, such as nuts, due to problems technicians (small clamps and with little force to hold the object and difficulty when removing it by the vocal cords, since the foreign body is not protected as it happens with the rigid one, etc.).

Once located and the patient being under general anesthesia, in the same act is removed by rigid bronchoscopy, with the technique already classically described [17–19]. The flexible and rigid bronchoscopy combined, is the most sensitive and specific diagnostic and therapeutic test before the suspicion of FB aspiration, since allows full visualization of the airway and the extraction of the object completely and safely under general anesthesia [18].

Complications, although rare, are possible, as the breakage of the object to be extracted, with penetration into healthy lung tissue, perforation of the respiratory tract or obstruction of the same before manipulations prolonged, etc. [1–3]. However, these complications usually occur when the instruments are not the appropriate, in the absence of professional experience or by diagnostic delay [20]. For this reason, in our hospital, after the extraction of the foreign body by rigid bronchoscopy, especially the nuts that can be broken, the entire airway is checked again with the fiber optic bronchoscope [18].

To avoid the morbidity and mortality that this entity implies in pediatric age the most important measure is prevention, insisting on family education for avoid taking nuts in children under 6 years, as well as a detailed anamnesis, insisting in possible episodes of suffocation, and a diagnosis precocious by the pediatrician [3].

References