

## Endobronchial foreign bodies in adults – Flexible bronchoscopy as a first approach



### Corpos Estranhos endobrônquicos em adultos – A broncoscopia flexível como primeira abordagem

Aspiration of a foreign body in the adult is a rare situation which may be realized by the individual, but often remains undiagnosed for a prolonged period of time.<sup>1</sup> The high index of clinical suspicion is the determining factor for identifying this situation given the absence of specific symptoms or signs. Rigid Bronchoscopy (BR) was considered for many years as the technique of choice, because it reduced mortality from 50% to less than 1%. However, recently some studies have successfully shown the safety and value of Flexible Bronchoscopy (FB) as a first method of approach.<sup>2</sup> The authors present a retrospective study, including patients who had been scheduled for FB for diagnosis and removal of foreign bodies at the Pulmonology Department of our hospital from 2011 to 2015.

The sample included 48 adult patients, 22 were male and 26 females, with a mean age of 66.04 years. Twenty-eight of these were initially observed and managed in an emergency context and 20 were scheduled for FB by referral. In 36 (75%) cases FB was sufficient for the diagnosis and removal of the foreign body. Of the remaining 12 patients, in 10 individuals FB was not successful and the removal required RB; in one individual, it was necessary to schedule a surgical intervention, due to the presence of fistula with pleural empyema, and in one patient the foreign body was expelled immediately after intubation. No intercurrents were observed with either technique. The use of RB was due to the impossibility of foreign body removal with FB in other hospital units of our reference area ( $n=8$ ) and because of granulation tissue ( $n=2$ ).

Of the foreign bodies found, 26 were made of organic material; 8 were bone fragments; 3 were phonatory prostheses; 2 were surgical compresses; 2 were dental pieces, 2 were metallic bodies and in 5 cases we were unable to

identify it. In Fig. 1 there are photographs of some of the foreign bodies removed.

We found that foreign bodies related to food and vegetables were the most closely associated with an early arrival to the Emergency Department. The interval between foreign body aspiration and its diagnosis was not objectively determined in 58.3% cases – it was calculated according to when patients' symptoms started. For 14 individuals this interval was less or equal to 1 week; in 10 patients from 1 to 4 weeks; and in 24 patients it was more than 4 weeks.

Regarding the first group (1 week), FB was used for all of them in as an emergency, while it was used for those with a delayed diagnosis in only 17.6% of the cases.

The most frequent symptoms were cough ( $n=42$ ), dyspnea ( $n=24$ ), hyperthermia ( $n=20$ ), thoracic pain ( $n=8$ ) and 6 presented with localized wheezing. Only one patient had no symptoms or signs. We found that dyspnea was more frequent in women (66.7%), in those with imaging alterations (58.3%) and with endobronchial alterations (75%).

The preferential location was the right bronchial tree in 66.7% of the cases, especially in the lower (13) and middle (12) lobes, related to the greater vertically and caliber of this bronchus.<sup>1,2</sup>

The main endobronchial findings were edema and congestion ( $n=14$ ), complete lumen obstruction ( $n=12$ ); granulation tissue ( $n=10$ ) and clots ( $n=2$ ). The observation of friable mucosa was mainly in individuals with non-food foreign bodies – occurred in 100% of cases when the object was a bone, dental material, or metallic.

Thoracic radiology was normal in 22 patients and in the remaining individuals the most frequent findings were: parenchymal opacification ( $n=18$ ), visible foreign body ( $n=6$ ) and bronchovascular accentuation ( $n=4$ ). We report 3 patients without radiological alterations that presented with edema and congestion during FB. In all individuals with normal chest radiography the foreign body was located in the proximal end of the right main bronchus or in the trachea.

RB still continues to be considered the preferential method to diagnose and manage this condition, due to its high efficacy, greater safety and a low rate of complications. It also has several advantages when compared to FB, such as better airway control and is a better way of addressing



Figure 1 Different bronchial foreign bodies removed.

possible complications that occur during the removal of the foreign body.

However, there are some unfavorable aspects such as the need for a greater technical experience, which may not be available among all pulmonologists in a particular institution, and it is more time-consuming. FB is not perfect either,<sup>3</sup> since the foreign body needs to be removed together with the bronchoscope, which can lead to the loss of the foreign body during this movement and a dramatic episode of suffocation may occur.

In our series, only 2 individuals had to perform RB due to the excessive presence of granulation tissue. This is similar to the findings on the other major Portuguese review on this topic, published more than 20 years ago.<sup>4</sup> Our results are also compatible with those from a Brazilian retrospective study evaluating the use of FB in adults.<sup>5</sup> We need to contextualize the reason of those other 8 RB – those individuals were referred to our hospital specifically to perform this procedure, since we are a reference center for this examination. In those cases, RB was always performed.

We did not have any complications resulting from the use of FB, similar to previous studies,<sup>4,5</sup> reflecting the safety of this option for both patients and physicians.

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## Conflicts of interest

The authors have no conflicts of interest to declare..

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## Tuberculosis and gender – Factors influencing the risk of tuberculosis among men and women by age group



Dear Editor,

Gender differentials in tuberculosis (TB) have been reported worldwide. Men are more likely to be diagnosed with TB than women, with a male-to-female ratio of 1.6:1, globally.<sup>1</sup> Different factors have been proposed to explain this gender gap including biological differences in disease and disease presentation and different access to health care specifically in developing countries.<sup>2–4</sup> Additionally, men are more likely to report risk factors associated with TB exposure.<sup>2,4–7</sup>

The aim of this study was to estimate TB incidence by age and sex in Portugal and to analyse factors influencing the risk of active TB among men and women by age group.

This was a retrospective cohort study conducted in Portugal (January/2010–December/2014). The resident population data was provided by Statistics Portugal and the TB cases and their clinical, demographic and social characteristics by the National TB Surveillance System (2010–2014).

A statistical analysis was performed using SPSS® 22.0. Categorical variables were presented as counts and proportions and compared using the Chi-square test. Continuous variables with normal distribution were described by mean and standard deviation (SD) and were compared using the Student's *t*-test for two independent samples. Statistical significance was achieved at a significance level of 0.05. Male-to-female ratio, TB notification rates and corresponding 95% confidence intervals (95% CI) were computed, and multivariable logistic regression was used to estimate odds ratio (OR) and 95% CI.

In the study period, 12,314 patients were notified, mean age 47.3 ± 18.9 years, 65.8% male (*n* = 8097). TB notification rate was significantly higher in males compared to females after the second decade of life. In males, the highest notification rate was 52.2 per 100,000 inhabitants (95% CI 49.9–54.5) in the 40–49 age group and in females it was 23.4 (95% CI 21.7–25.2) in the 20–29 age group (Fig. 1a).

After the second decade of life there was a progressive increase in the male-to-female ratio that reached the highest value in the 50–59 age group (male:female ratio = 3.4; 95% CI 3.0–3.7) (Fig. 1b). After a decrease in the sex ratio, sex differences increased again later in life (≥80 years).