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Occult bronchial foreign bodies — analysis of own material

Ciała obce przewlekłe zalegające w oskrzelach — analiza przypadków w materiale własnym

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Abstract

Introduction. The aspiration of a foreign body is usually combined with acute clinical symptoms requiring immediate medical intervention. Nevertheless, in approximately one third of patients the symptoms of aspiration are less prominent; such a clinical condition is called occult bronchial foreign body (OBFB).

The aim of our study was to assess the frequency of OBFB in the pulmonary unit of a district hospital and to evaluate the diagnostic difficulties and treatment modalities in such patients.

Material and methods: The examined group consisted of patients hospitalized in the Department of Lung Diseases in Radom District Hospital. A retrospective analysis of medical records was performed.

Results. In the period 1978–2008 — 12 patients (10 males, 2 females) were hospitalized due to OBFB. The foreign bodies occluded the bronchi over 2 months (3 to 7) in 4 patients. The moment of aspiration was not remembered by 8 patients. Cases of OBFB were rare. In the presented material the frequency was 4 per 10,000 hospitalizations and 8 per 10,000 bronchoscopies. In our region of 600,000 population the index of hospitalization due to OBFB in adults (> 14 years of age) was 0.07 per 100,000 inhabitants/year. Foreign bodies mainly included bone fragments (5 cases), vegetal remnants — clove of garlic, ear of corn (3 patients), and other food remnants (2 patients). Occasionally other aspirates were found, such as a wooden peg or a piece of plastic. The aspiration took place mostly during meals. The patients developed one or more of the following symptoms: purulent pneumonia (3 cases), pleural empyema (1 case), atelectasis (5 cases), and recurrent bronchitis and pneumonia (2 cases). The foreign body (fragments of plants) was mimicking a bronchial tumour in 4 patients. Fibre optic or rigid bronchoscopy was applied successfully in 11 patients. Only one patient needed surgical intervention.

Conclusion. OBFB is a rare condition, but has to be taken into consideration as a cause of chest radiological pathology and in patients with chronic and/or recurrent inflammatory disease of the respiratory system.

Key words: bronchial foreign body, aspiration, epidemiology, clinical symptoms, treatment

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Introduction

In most cases, aspiration of a foreign body into the trachea or bronchial tree causes acute symptoms requiring immediate medical intervention provided by emergency medical services, in laryngology, pulmonology, or thoracic surgery departments. In about one third of cases, however, aspiration has a milder clinical course. Patients quickly

forget about this episode, which can particularly concern handicapped or elderly persons and/or patients with central nervous system diseases as well as persons with substance abuse problems. In these patients, bronchial foreign bodies remain left for months or years, and patients cannot even recall the episode of aspiration. Such cases are often referred to as prolonged, chronic, or occult bronchial foreign bodies (OBFB) [1–4].

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Material and methods

The study group included patients hospitalised in the Department of Lung Diseases of the Regional Specialistic Hospital in Radom between 1978 and 2008. Medical records were reviewed retrospectively in order to identify all cases of OBFB. For the purpose of the study, an arbitrary definition of occult bronchial foreign body was adopted, including cases of more than two months history or cases when patients could not recall the incident of aspiration.

Results

Table 1 presents data concerning the group of 12 patients hospitalised because of OBFB. The group comprised 10 men and 2 women who were hospitalised in the authors' department between 1978 and 2008.

During the analysed period of time, the total of 26,000 patients were hospitalised, and the incidence of hospitalisations because of OBFB was 0.46%. Occult foreign bodies were identified in 0.8% of cases of all 15,000 consecutively performed bronchoscopies. Therefore, the respective indices of OBFB occurrence were 4.6/10,000 hospitalised patients and 8/10,000 patients who underwent bronchoscopy. As the region of Radom is inhabited by a population of slightly over 600,000 citizens of over 14 years of age, the rate of hospitalisations due to OBFB was 0.07/100,000 inhabitants/year.

The analysed patient population was dominated by men, and the M:F ratio was 5:1. The most often encountered type of foreign body was a bony fragment (5 cases), followed by vegetal rests (3 ca-

ses; foreign bodies included a clove of garlic and a crop's ear) and other alimentary rests (2 patients). In single persons, pieces of plastic or wood were identified. In most patients, aspiration occurred during mealtime.

Most patients (8/12) could not recall the actual moment of aspiration. In four patients, the aspiration occurred more than two months (range: 3–7 months) before hospitalisation.

At least one of the following symptoms/diseases could be identified in all analysed patients: purulent pneumonia (3 persons), pleural empyema (1 person), atelectasis (5 persons), recurrent episodes of bronchitis or pneumonia (2 persons). In four patients, bronchoscopic findings imitated bronchial tumour; in three of those persons histopathological analysis of the sample excluded malignancy and revealed the presence of vegetal tissue fragments.

Eleven patients were treated by fiberoscopy or rigid bronchoscopy. Intervention by a thoracic surgeon was necessary in only one person.

Case report

A fifty-six-year-old farmer who admitted to being a tobacco smoker was hospitalised in the Department of Lung Diseases of the Regional Specialist Hospital in Radom with left lung atelectasis and suspected bronchial tumour (Fig. 1). The patient complained of pain in the left hemithorax for the previous two months, had dyspnoea on exertion, moderately intensive cough, mild fever, with the appearance of scant haemoptysis and epistaxis several days prior to hospitalisation. The patient was in good general condition. Physical

Table 1. Occult bronchial foreign bodies in own material

Clinical data		Number — index
Incidence	Hospitalizations	12/26 000 (4/10 000)
	Bronchoscopies	12/15 000 (8/10 000)
Sex	M:F	5:1
Type of material	Bone fragments	5
	Vegetal remains (clove of garlic, ear of corn)	3
	Other food remains	2
	Others: piece of plastic, wooden plug	2
Time from aspiration	Unknown	8
	3–7 months	4
Complications	Purulent pneumonias	3
	Pleural empyema	1
	Atelectasis	5
	Reccurent bronchitis, pneumonia	2
	Bronchoscopic picture mimicking bronchial tumor	4



Figure 1. Chest X-ray - left lung atelectasis due to foreign body

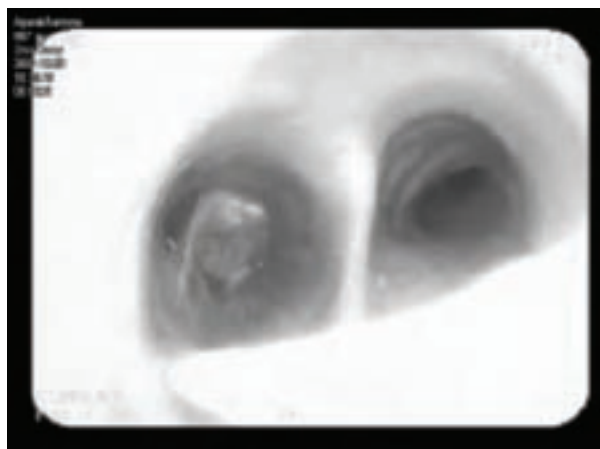


Figure 2. Bronchofiberscopy. Wooden peg size 45 × 11 millimeters in main left bronchus, displaced to main right bronchus during removal procedure

examination disclosed small left sided supraclavicular lymph nodes and signs of left lung atelectasis. Hypoxaemia was noted, with $\text{PaO}_2 = 52$ mm Hg and $\text{SpO}_2 = 91\%$. Tentative diagnosis of left lung atelectasis with secondary pneumonia was made.

Bronchoscopy confirmed obturation of the main left bronchus, with the presence of a small wooden peg in its lumen. The peg was 45 × 11 mm in dimensions, and posed a real difficulty under bronchofiberscopy but was finally removed (Fig. 2). Anamnestic data was completed; however, the patient could not recall any incident of foreign body aspiration.

Two days after the procedure, chest X-ray showed no signs of atelectasis but a secondary inflammatory process could still be seen in the left lower lobe (Fig. 3). Follow-up with control bronchoscopy a month later showed a normal picture of the bronchial tree.



Figure 3. The same patient, two days after foreign body removal: no atelectasis but yet secondary left lower lobe pneumonia remains

Discussion

Foreign body aspiration occurs in children three times more often than in persons of more than 15 years of age [5–7]. Men are more prone to such incidents, and the M:F ratio is 3:1 in adults and 3:2 in children [8, 9].

Types of bronchial foreign bodies are variegated, depending on patient age and cultural background including religious beliefs as well as alimentary habits [8–10]. Increasing incidence of aspiration of medical materials is observed alongside progress in medical techniques [11–13]. Casuistic descriptions reported a snail [14] or an air-gun pellet [4] found in the bronchial tree. The latter foreign body, previously unidentified, remained in the lung for 25 years, which resulted in lobectomy due to secondary chronic inflammatory and fibrotic lesions (Tab. 2).

Clinical findings are similar in acute aspiration and cases of chronic retention of bronchial foreign body. These include cough, dyspnoea, secondary infections including pneumonias, with radiologically identifiable infiltrates and atelectasis as well as pneumothorax. However, only the chronic retention cases give late sequelae, including recurrent infections, pulmonary abscesses, bronchiectasis, or pleural empyemas with fistula formation [2, 4, 15]. These also produce clinical, radiological, and bronchoscopic signs mimicking malignancy [16, 17]. Such cases often concern aspiration of vegetal material or other foreign bodies which cannot be visualised by routine imaging modalities such as X-ray [1, 3, 7]. In the presented patient group, a bronchoscopic picture of a bronchial tumour was observed in four persons. Aspirated foreign bodies can only in part obturate bron-

Table 2. Bronchial foreign bodies — kind of materials (data from literature)

	Foregin bodies — frequent	Foregin bodies casuistic — rare
Children	Peanuts Beans Dices, fragments of toys Coins Seeds Whistles Sewing neddles	Pneumatic pistol pellet [4]
Adults	Bone fragments, denture Vegetal remains Stones Turban pin [9] Medicals products: • dental prothesis • speech dentures • fragments of intubation tubes • stents	Helix pomatia [14]

chial lumen and induce wheezing, erroneously diagnosed and treated as signs of asthma [1, 6, 8, 18].

In the vast majority of cases, aspirated foreign bodies can be removed by bronchofiberscopy or by using a rigid bronchoscope, and such was the case for most of the described patients. Intervention must sometimes be repeated, but the need for thoracic surgeon involvement, including thoracotomy, occurs very rarely [3, 5–7, 10, 19–21].

Summary

Occult bronchial foreign bodies are seldom observed. However, such an entity must always be considered in differential diagnostics of radiologically or clinically identified chronic and/or recurrent inflammatory conditions of the respiratory tract.

Conflict of interest

The authors delare no conflict of interest.

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