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ORIGINAL ARTICLE

Management of airway foreign body using flexible bronchoscopy: Experience with 80 cases during 2011–2013



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KEYWORDS

Flexible bronchoscopy;
Foreign body;
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Abstract *Background:* Foreign body aspiration (FBA) into the tracheobronchial tree is a serious problem necessitating prompt recognition and management. This study aimed to report our experience in airway foreign body removal by flexible bronchoscopy.

Study design: Descriptive study.

Methods: A total of 80 patients with FBA were included in the study. They were 61 pediatric cases and 19 adult cases. Sixty-four were females and 16 cases were males, their age ranged from 2 to 52 years. The clinical manifestations, radiological findings and bronchoscopic findings of the procedure were analyzed.

Results: Among the patients, only 88.8% had a definite history of FBA. The most frequent symptom was paroxysmal cough (61.3%), followed by expectoration, fever or wheezing, hemoptysis and dyspnea. Chest X-ray showed radiopaque foreign body in 78.8% of the patients, normal chest radiology in 8.8% and right lower lobe consolidation in 6.3%. The most common location of FB was either right or left lower lobe bronchus (16, 20%). Sixty-two (77.5%) of FB inhalation were pins, followed by seeds in 6 patients (7.5%), and plastic toys in 5 patients (6.3%). The gestures that lead to FBA by the patients were during laughter in 28 cases (35%), chalking (26.2%), talking (15%) and sneezing (8.8%). In 9 patients (11.2%) the acts that lead to FBA were not identified by the patients.

Conclusions: Flexible bronchoscopy is successful in retrieving airway foreign bodies (88.8%). With skilled personnel and perfect equipments, flexible bronchoscopy could be considered as the first choice for the removal of airway foreign body.

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Introduction

Aspiration of foreign body (FB) into the tracheobronchial tree is a common problem, especially in children, necessitating prompt recognition and early management. A delay of

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diagnosis and retention of FBs usually increase morbidity and mortality, ranging from choking and fatal airway obstruction to recurrent chronic cough or wheezing and non specific chest infections [1–3]. Rigid bronchoscopy was considered as the main procedure for management of FB aspiration (FBA) [3–6].

Recently, flexible bronchoscopy has been widely used for the removal of foreign bodies. It allows doctors to get a detailed evaluation of the location and type of FB and airway changes with minimal complications [2,7–9].

In most cases diagnosis of FBA is made by positive history within few hours up to 2–3 days of the event. However, in some cases the diagnosis took from several weeks to months [10].

In the interventional bronchoscopy unit, Kasr El Aini hospital, Cairo University, we apply fibrobronchoscope in the initial evaluation and retrieval of FBs. With experience accumulated, we analyzed the clinical data of 80 cases with FBA and reviewed our experience with therapeutic flexible bronchoscopy for extraction of FBs.

Aims and objective

The objective of the study was to detect and analyze the rate of occurrence of foreign bodies inhaled in males and females in different age groups.

The study aimed to analyze the most common clinical manifestations, radiological findings and bronchoscopic finding of FBA and, also, to detect the number, the different types and gestures that lead to FB inhalation.

The study aimed to detect the success rate of using flexible bronchoscopy for the removal of airway foreign body.

Methods

This descriptive study was conducted prospectively and sampling done on conveniences by the approval of The Human Study Committee of Kasr El Aini Hospital of Cairo University. The study was carried out at the department of chest diseases, Kasr El Aini Hospital, Cairo University. A total of 80 patients with FBA undergoing flexible bronchoscopy from January 2011 to August 2013 were enrolled.

Depending on the age and body weight of the patients, 2 kinds of fibrobronchoscopes including Pentax EB-1170 K (external diameter: 2.8 mm, working channel: 1.2 mm) and Pentax EB-1830T3 (6 mm, 2.8 mm) were used. Other ancillary equipment included biopsy forceps, digital video work station, life monitors, oxygen supply system and emergency equipment.

Informed consents were obtained from the patients or patients' parents before the procedure. No food or drink was taken within 6 h before procedure. Flexible bronchoscopy was performed under sedation and local anesthesia. Atropine (0.01–0.02 mg/kg) was administered intramuscularly 20–30 min and midazolam (0.1–0.15 mg/kg) was injected 5–10 min before the procedure. Aerosolized lidocaine was sprayed on the throat first, and then lidocaine was dripped into the trachea and bronchus for local anesthesia during flexible bronchoscopy. Bronchoscope was inserted orally through a mouth piece. Biopsy forceps were used to remove the FB. Bronchoalveolar lavage (BAL) was performed for microbiological determinations in patients with a long duration of

> 15 days or presentation with inflammation during or after the FB was removed [11].

Heart rate, respiratory rate, and SpO₂ were monitored during the whole procedure, and if the patients were hypoxic (cyanosis, low SpO₂ and/or high heart rate), oxygen of appropriate concentration was given by nasal prong, and the procedure was ceased temporarily when necessary.

Statistical methods

Data were statistically described in terms of range, median, frequencies (number of cases) and percentages when appropriate. Comparison of numerical variables between the study groups was done using Chi square (χ^2) test. All statistical calculations were done using computer programs SPSS (Statistical Package for the Social Science; SPSS Inc., Chicago, IL, USA) version 15 for Microsoft Windows.

Results

A total of 80 patients with FBA undergoing flexible bronchoscopy (61 pediatric cases and 19 adult cases) were enrolled in this study. They were 64 females and 16 males with age ranged from 2 years to 52 years with a median of 15 years. Female to male ratio was 4:1. The duration of FB retention ranged from 9 h to 12 years with a median of 2 weeks (Table 1).

Among the 80 patients, only 71 (88.8%) had a definite history of FBA and 8 patients (10%) had a history of unsuccessful trial of FB removal by rigid bronchoscopy. The most common symptom was paroxysmal cough (49, 61.3%), followed by expectoration (29, 36.3%), fever (25, 31.1%), wheezes (6, 7.5%), dyspnea and hemoptysis were each (3, 3.8%).

Table 1 Characteristics of patients with airway foreign bodies.

Characteristics	Numbers of patients	Percentage (%)
Gender		
Female	64	80
Male	16	20
Age		
Pediatric	61	76.3
2–10 years	23	37.7
11–18 years	38	62.3
Adult	19	23.7
19–28 years	13	68.4
29–38 years	3	15.8
39–48 years	2	10.5
More than 49 years	1	5.3
Median age (15 years)		
Range (2–52 years)		
Duration of FBA		
< 1 day	1	1.25
1–15 days	68	85
16–30 days	2	2.5
1–6 months	5	6.25
6–12 months	2	2.5
1 year or more	2	2.5
Median duration(2 weeks)		
Range (9 h to 12 years)		

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