Journal of Health, Medicine and Nursing
ISSN 2422-8419 An International Peer-reviewed Journal
Vol.28, 2016

Laryngeal and Tracheobronchial Foreign Body - Bronchoscopic Removal with Telescopic Guidance

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ABSTRACT

Introduction:

Foreign body aspiration is a challenging experience for otolaryngologists the world over especially in the pediatric age group. Presentation could be within few hours to years depending on the type, size, location and the presenting symptom of the foreign body. The major issue involves the accurate diagnosis, speedy and safe removal, thus the method of removal is therefore of importance. This study evaluates the value of bronchoscopy with telescopic guidance in tracheobronchial foreign body removal in Bingham University Teaching Hospital Jos.

Methods:

A retrospective review of patients who had bronchoscopy for suspected foreign bodies in the larynx/ tracheobronchial-tree, attending or referred to BHUTH over a 5 year period - June 2010 to June 2015. Records were retrieved and analyzed for age, type of FB aspirated, time of presentation, etc and the method of removal (i.e. bronchoscopy under telescopic guidance).

Results

58 patients aged 1 to 16 years were seen with 39 males and 19 females, m:f ratio of 2.05:1. Commonest age group less than 5 years (n=36) 62%, most common site of lodgment is the right main bronchus in 42 cases (72.4%). Commonest foreign bodies were organic (peanuts, seeds and other food particles) 44(75.9%), however inorganic FB (plastic and metallic materials - toys, ear rings, pins) 14(24.1%) were seen with longer duration at presentation. Removal was by bronchoscopy under telescopic guidance. No mortality, but morbidity in the form of pneumonia in six cases and cardiac arrest in one case which was successfully resuscitated.

Conclusion and Recommendations:

Telescopic guided removal was more accurate and with less complications. Since accurate diagnosis of FB aspiration is challenging, suspected cases of TFB aspiration should always have explorative bronchoscopy.

Key Words: Laryngeal, Tracheobronchial, Foreign Body, Bronchoscopy, Telescopic guidance.

Introduction

Foreign body aspiration presents a challenge to the otolaryngologists the world over in terms of diagnosis, early, speedy and safe retrieval of the FB especially in the pediatric age group.

Gustav kalian performed the first endoscopic removal of a FB from the bronchus of a man using a 9mm tube in 1897[4, 6]. Chevalier Jackson however is credited with the development of the instruments and techniques which made rigid bronchoscopic removal of foreign bodies a successful procedure by 1936[4, 6].

With the development of the Hopkins rod-lens telescope in the 1970s[4, 6] a major improvement for the rigid bronchoscopic removal of foreign bodies was achieved. This provided improved illumination and visualization with more accuracy, safe and less complications at removal.

Presentation after aspiration could be within few hours to years depending on the type, size, location and the symptoms[11, 12].

Initial symptoms may include violent coughing paroxysms, wheezing, choking and may be followed by a period when the patient is relatively asymptomatic[2, 3, 11, 12]. Depending on the presence of an eye witness, volunteered history from the patient or awareness of the parents / relations of the patient, presentation to hospital may be delayed until patient develops a cough, haemoptysis, pneumonia, lung abscess, fever and malaise[2, 3, 8, 9, 11, 12].

The first medical facility of presentation is also of concern as regards the clinical assessment and thus management. The major issue therefore involves accurate diagnosis, speedy and safe removal of the FB from the TBT system. The method of removal and the kind of instrument for the removal is therefore of importance. It has been found that the use of the rigid bronchoscope with telescopic guidance and the conventional forceps for removal of the FB is most appropriate.

This study evaluates the value of bronchoscopy with telescopic guidance in tracheobronchial foreign body removal in Bingham University Teaching Hospital Jos. Most of the patients with tracheobronchial foreign body aspiration are under the age of 5years as seen in almost all the studies done on this subject[1,2,3,4,6,7,8,9,10,11,12.]. The youngest age group, is however most venerable because they lack adequate dentition and immature swallowing coordination and are also very curious and therefore explore their world by introducing everything into their

mouths. The most common FB aspirated are organic materials like peanuts, seeds, and other food particles; however inorganic materials are also found e.g. plastic and metallic materials - toys, ear rings, whistles, pins, beads ; this is in agreement with a lot references sited in this paper[1,2,3,7,8,9,10,11,12.].

Methods

A retrospective review of bronchoscopy for suspected or confirmed foreign bodies in the larynx or the tracheobronchial tree attending or referred to BHUTH over a five year period - June 2010 to June 2015. Case notes of patients were retrieved and information regarding them were obtained - the age and sex of the patient, time of presentation, type of FB, the location of the FB, method of removal noted(in this case bronchoscopy under telescopic guidance).

Results:-

58 patients aged between 1-16 years were seen with 39 males and 19 females, thus giving a male to female ratio of two point zero five to one (m:f = 2.05:1) . The commonest age group was less than 5 years (n-36) 62%. The next is the six-the ten year group (n-18)31.1%, the remaining occurred in age group 11-16 years (n-4)6.9%. There were two cases of laryngeal FB in a 10year old female and a 16 year old male who aspirated an earring and a small whistle which were found in the subglottic region and the larynx respectively. The commonest site of lodgment is the R main bronchus with (n-42)72.4%, the L main bronchus has (n-10)17.2% and the remaining (n-4)3.4% were in the subglottic region and the larynx. The commonest foreign bodies were organic in nature (peanut, seeds and other food particles), n- 44 (75.9%); inorganic FB (plastic and metallic materials - beads, toys, ear rings, whistles, pins), n-14 (24.1%).

The Foreign bodies in the tracheobronchial tree were removed by bronchoscopy under telescopic guidance while the laryngeal FBs were removed by direct laryngoscopy.

There was no mortality in the whole series however mobility in the form of pneumonia in six of the patients; cardiac arrest occurred in one case (patient was however successfully resuscitated).

Discussion

Foreign body aspiration into the tracheobronchial tree is not an uncommon problem in the peadiatric age group. Diagnosis however is very challenging due to the fact that presenting symptoms might not be classical at the time of presentation. The presenting symptoms usually depend on the size, site, and duration of lodgment of the aspirated foreign body. Aspiration is mostly common in the under five age group due to their curiosity, inability to masticate well, improper control of deglutition, ambulation during meals and general hyperactivity[1,2,3,8,9,12.].

In this study aspiration was commoner in males than females (M: F = 2.05:1) this is comparable to many of the references sited in this study[1,2,3,7,8,9,10,11,12.].The common site of lodgment is the R main bronchus as compared to the L, this is due to the obvious anatomy of the tracheobronchial tree as noted by other studies cited here and Inorganic foreign bodies were more than organic[1,3,11,12.]. The duration at presentation was noted to be within few hours to about two years. The long duration at presentation was due to the fact that the patients were referred from peripheral hospitals in the adjoining states where they were being managed as chronic respiratory tract infection without radiological investigation or any other form of investigation. Referral was based on the long standing or worsening symptoms.

High index of suspicion with radiological investigation in our centre resulted in bronchoscopy with subsequent removal of the foreign body with telescopic guidance. Rigid bronchoscopy with telescopic guidance gives better illumination and visualization; thus accurate, safe and less complications at removal were achieved.

Conclusion/Recommendation

Telescopic guided bronchoscopy for removal of foreign body from the tracheo-bronchial tree was noted to be more accurate, safe with minimal complications due to better illumination.

Diagnosis of foreign body aspiration is quite challenging. Thus suspected cases of tracheo-bronchial foreign body aspiration should always have explorative bronchoscopy.

Public and parental education is advocated to reduce the incidence of foreign body aspiration and also enhance early presentation in the appropriate medical facility for better outcome.

Competing Interest:

The Authors declare that they do not have any competing interest.

Contributions:

NLT analyzed the data, carried out literature search and prepared the manuscript. AAA reviewed the write-up while YJP collected the data.

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