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BRONCHOSCOPY AND FOREIGN BODY REMOVAL IN CHILDREN – CAN WE CHANGE THE OUTCOME?

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ABSTRACT **Background:** Diagnosis of Foreign body aspiration is often delayed due to lack of awareness. Objective: This study was done to find out the incidence and sequel of delayed diagnosis in the patients referred to a tertiary care center. **Study Design:** The data of patients presenting with foreign body bronchus over a period of 12 years were reviewed. **Participants:** All children who underwent foreign body removal at our centre from 2010 to 2022. **Intervention:** Rigid bronchoscope and foreign body removal was done in all cases. **Outcome:** Successful removal could be accomplished in all cases. **Results:** We had a total of 109 patients. Time taken to report to the hospital after aspiration ranged from 1 to 365 days with a mean of 15 and median of 3 days. Mean age was 2.4 years. Sixty-two had foreign body of the right side, 40 on the left side, 2 on both sides, 3 at Carina and 2 in trachea. Groundnut was the most common foreign body with 61 children having them. Twenty-four children underwent CT chest for confirmation of diagnosis. One child required a second bronchoscopy after 24 hours for complete removal of the foreign body. One child had erosion and perforation of the bronchus. We did not have any death in the series. **Conclusions:** Awareness about foreign body aspiration has to be increased among the general public and primary care physician to facilitate an early referral. Foreign body can be effectively and safely managed with rigid bronchoscope and optical forceps.

KEYWORDS : Bronchoscopy, foreign body, aspiration, choking.

INTRODUCTION

Foreign body bronchus (FB) is a common Paediatric surgical emergency. Our aim was to find out the profile and delay in referral of the patients that comes with FB and whether that will lead us to better management and preventive measures.

METHODS:

A retrospective review of data of patients presenting with foreign body bronchus over a period of 12 years was reviewed. Diagnosis of FB was made based on the history, hyperinflation or the collapse of the affected side and CT scan which was done when Xray and history was not confirmatory. When the FB aspiration was more than 48 hours and the patient was stable and not desaturating, the child was admitted to the ICU and decongestants and bronchodilators were given before taking up for bronchoscopy. A retrospective review of data of patients presenting with foreign body bronchus over a period of 12 years was reviewed. Diagnosis of FB was made based on the history, hyperinflation or the collapse of the affected side and CT scan which was done when Xray and history was not confirmatory. When the FB aspiration was more than 48 hours and the patient was stable and not desaturating, the child was admitted to the ICU and decongestants and bronchodilators were given before taking up for bronchoscopy. If during bronchoscopy granulation tissue was found around the FB then 1:1000 adrenaline saline was instilled to minimize the bleeding. Rigid bronchoscope and optical forceps were used in all the cases. In some cases where the FB had migrated into the distal bronchus, Dormia basket was used for retrieval. In none of the cases flexible bronchoscope or cryoprobe were needed for removal of the FB.

RESULTS:

We had a total of 109 patients. Time taken to report to the hospital after aspiration ranged from 1 to 365 days with a mean of 15 and median of 3 days [Figure 1].

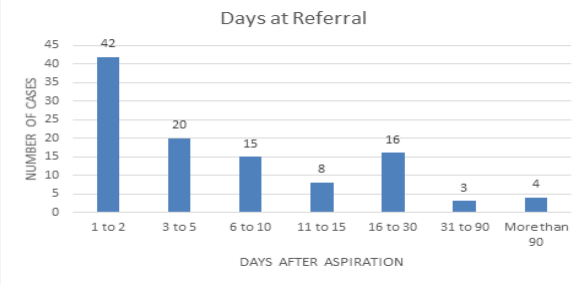

Figure 1

The average hospital stay was 4.2 days with a range of 2-20 days. Mean age was 2.4 years, the median was 1 year. 62 had F.B of the right side, 40 on the left side, 2 on both sides, 3 at Carina and 2 in trachea [Figure 2].

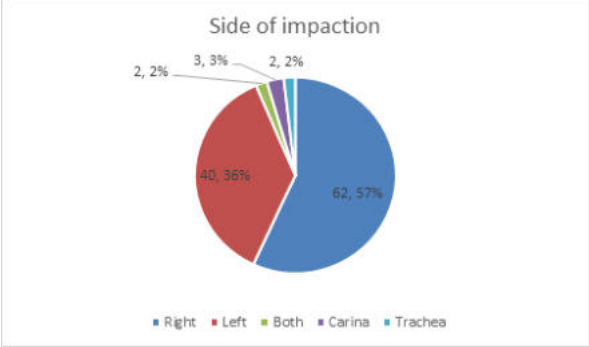

Figure 2

Groundnut was the most common FB with 61 children having them, followed by unidentified seed 8, cashew nut 6, and other FBs [Table 1]. One child had erosion of the left intermediate bronchus from long standing FB of one week duration. One child, came one year after aspiration of a light emitting diode.

Table 1

Type of Foreign Body	Number
Groundnut	61
Seed	8
Cashewnut	6
Almond	4
Coconut	4
Hair pin	3
Whistle part	3
Other vegetable pieces	8
Other metallic parts	5
Bone	2
Granulation tissue	1
LED	1
Tablet cover	1
Tooth	1
Unidentified	1
Total	109

Twenty-four children underwent CT chest for diagnosis since history and x-ray were equivocal. One child required a second bronchoscopy after 24 hours for complete removal of the foreign body. We did not have any death in the series.

DISCUSSION:

In our study, the mean age was 2.4 years with median of 1 year. Time taken to reach the hospital varied from 1 to 365 days with 7 children presenting more than a month late. One child had a history of peanut aspiration for one week. At bronchoscopy, a peanut was found in the left intermediate bronchus which was removed. There was erosion of the bronchial wall with perforation and purulent discharge from the site. The child was treated conservatively with antibiotics since there was no mediastinal emphysema or pneumothorax. Repeat X-ray after 2 weeks was normal.

The mean age reported in other studies is 4.5 years [1]. Fuad Brkic reported a mean age of 2.2 years, which is in accordance with our findings [2]. Mallick et al in 2005 reported 28 cases of late presentation of foreign body aspiration more than 1 month [3].

This delayed presentation is significant and points to lack awareness of the problem among parents and primary care physicians. Our patient, who had a delay of one year had aspirated a LED (light emitting diode). This was noticed by the father, but since the child did not have any symptoms, he did not seek medical attention. This again points to the need for education of the public regarding FB aspiration. Another reason for delay in reporting to hospital was the lack of awareness in the primary care physician who in most of the cases treated them a respiratory tract infection and referred only when the symptoms did not subside with medication.

Although conventionally foreign bodies are thought to get impacted on the right side, we had 40% cases with foreign body on the left side. This is because of the lower age group in our series. Bronchial angles are symmetrical in a lower age group, although later the aortic indentation makes the left bronchial angle more acute [4]. This makes FB impaction in right main stem bronchus commoner in older age group. We did not use cryoprobe in any case. Use of cryoprobe and flexible bronchoscope do not allow ventilation at the same time. This worsens the hypoxia the child is already having. Although cryoprobe does not damage the cartilage there are reports of it damaging the mucosa [5]. We believe that cryoprobe should be used only if other means of retrieval fails.

To conclude, awareness about FB aspiration must be increased among the public and primary care physician to facilitate an early referral. Four patients were treated up to one year as upper respiratory tract infection before they were referred. Early use of CT chest may prevent the delay in diagnosis in doubtful cases. Foreign bodies can be effectively and safely managed with rigid bronchoscope and optical forceps. Bronchial erosion or perforation that can occur for a long-impacted FB can be managed conservatively since by the time the erosion or perforation occurs the peri-bronchial area would have got walled off with inflammatory tissues.

Conflict Of Interest: Nothing to declare.

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