Variable Presentation of Foreign Body Aspiration in Children: Diagnostic Dilemma

ABSTRACT

Aim: To determine the frequency of common clinical presentations in children with foreign body aspiration. **Methodology:** This cross sectional study was done during the period of March, 2017 to Feb, 2018 A total of 84 children with history of foreign body aspiration were included. The data was entered in the proforma which includes history and the common presentation. The study was approved by ethical review board of PUMHSW. Written informed consent was taken from parents/guardian of all participants. **Results:** The average age of the children was 3.2±1.69 years. There were 52(61.9%) male and 32(38.1%) were female. Frequency of common clinical presentation was repeated attacks of cough 64.3%, respiratory distress 64.3% followed by sudden onset of choking 54.8%, non-responsive to treatment 34.5%, cyanosis 11.9% and with decrease air way breath sound in right and left as well as bilateral lung was 44%, 23.8% and 16.7& respectively. 46.4% had right, 22.6% left and 25% bilateral hyperinflation similarly 17.95 right, 15.5% left lung were collapse. **Conclusion**: Beetle nut as foreign body inhalation is more common in children. Repeated attacks of cough, respiratory distress, and chocking are the commonest symptoms. FBA should be kept in differential diagnosis of persistent cough in children.

Keywords: Foreign body aspiration, Respiratory distress, Cyanosis.

1. INTRODUCTION

Foreign body(FB) aspiration is one of the frequent problem occurring commonly in between 1-5 yrs old children with significant morbidity & mortality[1-3]. Children are more susceptible due to tendency of putting everything in their mouth, lack of molar teeth, play during the time of ingestion and the poor coordination of swallowing [4, 5]. It has been reported that every year in USA approximately 500-2000 deaths occur from foreign body aspiration[6, 7]. Several such studies had been conducted in Pakistan as well but true incidence is still not known but death due to foreign body aspiration is much higher than developed countries, even in a study in India the mortality rate due to foreign body was 1% [8].

The laboratory and radiological investigations are not helpful in detection of non-metallic organic foreign bodies like peanuts, betel nut and seeds [9]. The type of foreign body which is more common in Pakistan is betel nut comparing to foreign literature, where peanut and plastic materials are common foreign bodies. Bronchoscopy is the best intervention for diagnosis and removal of foreign body but it is not without hazards so it needs expertise to minimize the procedural complications [10].

The signs and symptoms of foreign body aspiration are variable depends on the age of the children, the type of object aspirated, the location of the object, and the elapsed time since the event. The successful diagnosis and treatment of this problem requires awareness and highest degree of suspicion of signs and symptoms of foreign body aspiration.

The rationale of the study is to estimate the current magnitude of foreign body aspiration so that strategies can be made for accurate diagnosis and prompt management of such cases thereby to reduce mortality.

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2. MATERIAL AND METHODS

This cross sectional study was conducted at Pediatric surgery ward, PUMHSW, Nawabashah during the period of March, 2014 to March 2015. Eighty four children between the ages of 1-5 years of both sexes with history of foreign body aspiration were included while the children with known asthma, tuberculosis and long history of fever followed by respiratory infection were excluded from this study. Children with history foreign body aspiration were enrolled from emergency department and also shifted from pediatric medicine to surgery ward on basis of history, fulfilling inclusion and exclusion criteria. The data was entered in the proforma (which includes history, examination and investigation i.e. x-ray chest and the common presentation as which was done in every patients). The data was analyzed with SPSS version 16 software.

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3. RESULTS

A total of 84 children with history of foreign body aspiration were included in this research to measure common clinical presentation. The average age of the children was 3.2±1.69 years. Out of 84 cases, 52(61.9%) were male and 32(38.1%) were female (Fig 1). Regarding type of foreign body, 71(84.52%) were betel nut, 6(7.14%) were peanut and 7(8.33%) were whistle piece (Fig 2). Average duration of aspiration was 12.65±34.46 days. Frequency of common clinical presentation was repeated attacks of cough 64.3%, respiratory distress 64.3% followed by sudden onset of choking 54.8%, non-responsive to treatment 34.5%, cyanosis 11.9% and with decrease air way breath sound in right and left as well as bilateral lung was 44%, 23.8% and 16.7& respectively. 46.4% had right, 22.6% left and 25% bilateral hyperinflation similarly 17.95 right, 15.5% left lung were collapse (Tab 1). Frequency of common clinical presentation in children with foreign body is presented in table 2.

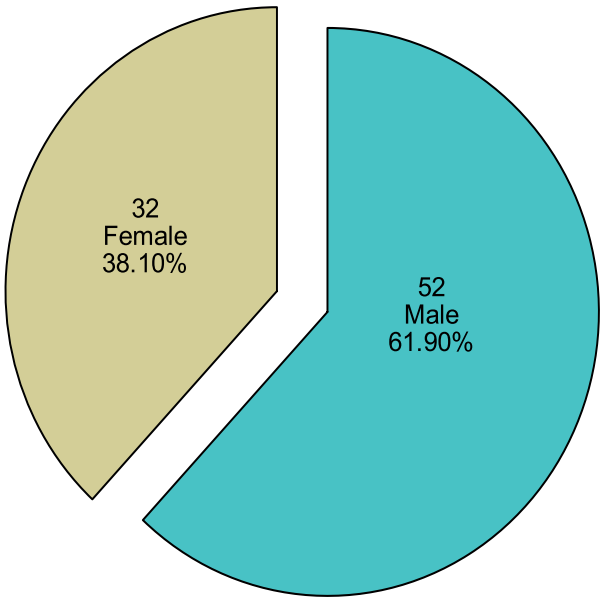

Figure 1: GENDER DISTRIBUTION OF THE PATIENTS

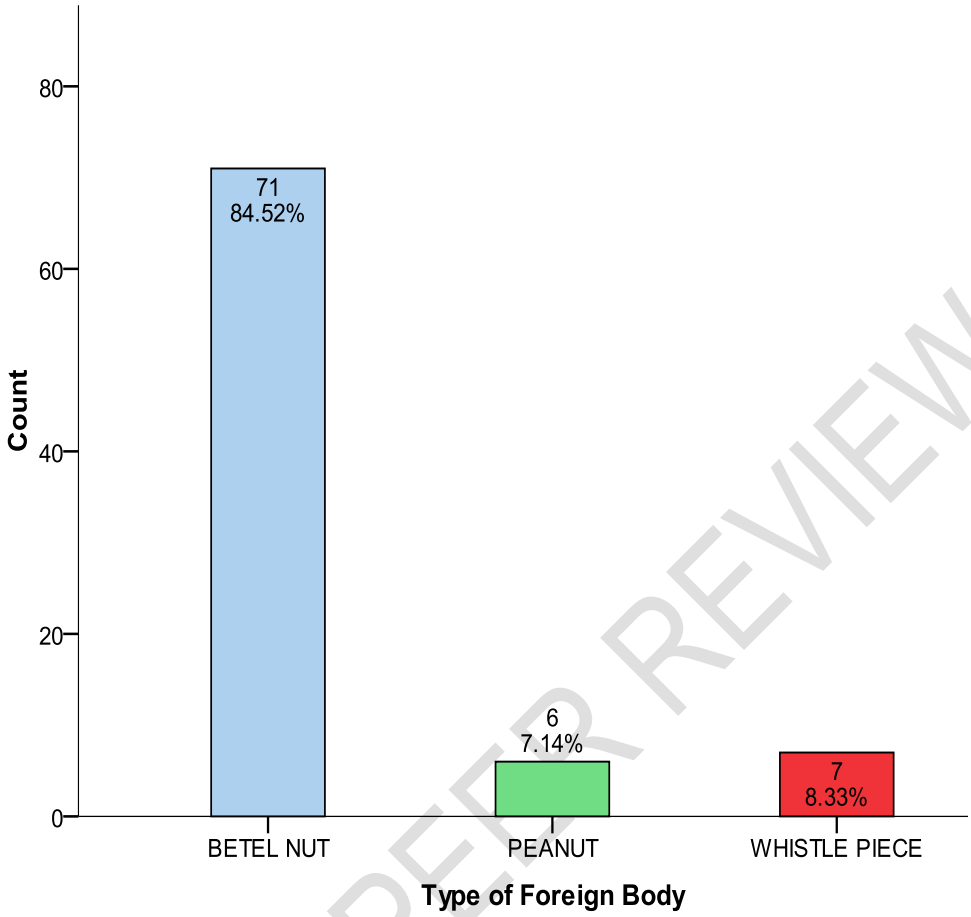

Figure 2: TYPE OF FOREGIN BODY RETRIEVED

TABLE 1: FREQUENCY OF COMMON CLINICAL PRESENTATION IN CHILDREN WITH FOREIGN BODY

Common Clinical Presentation	Frequency	Percentage
Repeated attacks of cough	54	64.3%
Sudden onset of choking	46	54.8%
Respiratory distress	54	64.3%

Non-responsive to treatment	29	34.5%
Cyanosis	10	11.9%
Inspiration wheeze	22	26.2%
Air entry on affected site lung Right' Left Bilateral Normal	 37 20 14 03	 44% 23.8% 16.7% 3.6%
Hyperinflation Right Left Bilateral	39 19 21	46.4% 22.6% 25%
Collapse Lung Right Left Bilateral	 15 13 00	 17.9% 15.5% 0%

TABLE 2: FREQUENCY OF COMMON CLINICAL PRESENTATION IN CHILDREN WITH FOREIGN BODY BY TYPE OF FB

Common Clinical Presentation	**Type of Foreign Body**		**P-Value**
	Betel Nut n=71	**Peanut and Whistle Piece n=13**	
Repeated attacks of cough	46(64.8%)	8(61.5%)	0.82
Sudden onset of choking	36(50.7%)	10(76.9%)	0.08
Respiratory distress	47(66.2%)	7(53.8%)	0.39
Non-responsive to treatment	25(35.2%)	4(30.8%)	0.75

Cyanosis	9(12.7%)	1(7.7%)	0.61
Inspiration wheeze	19(26.8%)	3(23.1%)	0.78
Air entry on affected site lung Right Left Bilateral Normal	 30(42.3%) 26(36.6%) 14(19.7%) 1(1.4%)	 8(61.5%) 2(15.4%) 1(7.7%) 2(15.4%)	0.026
Hyperinflation Right Left Bilateral Normal	 32(45.1%) 16(22.5%) 19(26.8%) 04(5.6)	 7(53.8%) 3(23.1%) 2(15.4%) 1(7.7%)	0.84
Collapse Lung Right Left Normal	 14(19.7%) 13(18.3%) 44(62%)	 1(7.7%) 0(0%) 12(92.3%)	0.091

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4. DISCUSSION

Foreign body aspiration is frequently encountered in pediatric practice; however, the condition is often not diagnosed immediately because there are no specific clinical manifestations. Usually, there is a suggestive history of choking, although the classic clinical presentation, with coughing, wheezing, and diminished air inflow, is seen in less than 40% of the patients; other symptoms include cyanoses, fever, and stridor. FB aspiration exists as a worldwide medical emergency leading to high mortality if not dealt promptly and timely. The data is lacking in Pakistan but FB aspiration has led to 7% of all accidental deaths in under 4 yr children in US and mortality rate in a study in India is 1%[8].

The evolution of FBA can lead to variable degrees of respiratory distress, atelectasis, chronic coughing, recurrent pneumonia, and even death[11,12].

Rigid bronchoscope is the recommended investigatory tool for visualizing and retrieving FB in children.16 Peanut was the commonest FB recovered in many studies[13]. Betel nut was the commonest FB in this study. Betel nut (Chalia) is sold in small sachet at school tuck shop and brought to home by the elder siblings.

Parents were unaware of immediate symptoms after inhalation. Choking is the commonest first response of impaction of FB in the tracheobronchial tree but it may be for such a short span in some cases as unnoticed[14]. The FB on lodging invokes the inflammatory reaction which is manifested as cough. The cough always needs medical attention. The cough has been said chronic when it remains for a period of > 8 weeks[15].

In this study frequency of common clinical presentation was repeated attacks of cough 64.3%, respiratory distress 64.3% followed by sudden onset of choking 54.8%, non-responsive to treatment 34.5%, cyanosis 11.9% and with decrease air

way breath sound in right and left as well as bilateral lung was 44%, 23.8% and 16.7% respectively. 46.4% had right, 22.6% left and 25% bilateral hyperinflation similarly 17.95% right, 15.5% left lung were collapse.
A study done in Iran by Nader Saki et al which reported that cough 73.3% (n=741) was most frequent symptoms after aspiration, other symptoms were cyanosis 13.18% (n=134)[16].
In another study in Spain, Alvarez-Buylla et al reported that cough was most characteristics symptoms which was present in 52.27% (n=23), other related symptoms were choking 36.3% (n=16), cyanosis in 13.6% (n=6), wheezing in 9.1% (n=4) & decrease breath sounds in 54.5% (n=24) & common foreign body which was retrieved in their study was peanut i.e. 61.3% (n=27) [10].
In Pakistan, a study done at Peshawar which also reported that cough 92% (n=77) was the main symptoms[6]. In 2003, IlyasBaddar et al did study in Islamabad in which he reviewed that 81% (n=88) presented with dyspnea & tachypnea, 68% (n=74) with cough, 47% (n=51) with cyanosis, 37% 9n=40) with choking, 77% (n=83) with decrease breath sounds & 60% (n=65) had hyperinflation on x-ray chest on affected side of lung[9].

Recommendations for prevention of FBA in children, highlighted in medical literature should be framed[17]. The awareness of protected environment for children to avoid accidental emergencies should be addressed by media like TV. Beetle nut (Supari) retrieved in other studies remained at the top FBA in children[18]. Ban on the sale of Supari be implemented by authorities as it causes damage to teeth and oral mucosa also.

4. CONCLUSION

Beetle nut as foreign body inhalation is more common in children. Repeated attacks of cough, respiratory distress, and choking are the commonest symptoms. FBA should be kept in differential diagnosis of persistent cough in children.

ETHICAL APPROVAL AND CONSENT

The study was approved by ethical review board of PUMHSW. Written informed consent was obtained from parents/guardian of all participants.

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