Foreign Body Aspiration in Children - A Persistent Problem

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Pages with reference to book, From 33 To 36

Abstract

Objective: Cough and respiratory distress due to foreign body inhalation in children is a common problem in our society. This study was planned to identify the criteria for early diagnosis and management in suspected cases of foreign body inhalation.
Setting: The study was carried out on indoor patients of Paediatrics Department, Rawalpindi General Hospital (RGH) affiliated with Rawalpindi Medical College (RMC), from January, 1995 to December, 1996. Paediatrics Department has 50-bedded general paediatrics ward, 20 - bedded neonatal unit (NNU) and 150-200 daily attendance of outpatient department (OPD). It offers primary to tertiary level care to its patients from whole of Rawalpindi Division.
Methods: This prospective study encompasses profile and immediate outcome of 20 suspected cases of foreign body inhalation. Selection of study subjects and subjection to bronchoscopy was based on syniptomatology, clinical and radiological findings and response to treatment. The data with outcome was recorded on a proforma.
Results: In 18 cases foreign body was removed successfully by rigid bronchoscope with immediate relief of symptoms and normal chest roentgenograms. Most susceptable age for foreign body inhalation was 1-3 years (n=14) and male children were at higher risk than females (13 vs 7). Valuable clinical fetures were sudden onset with respiratory distress, cough, choking, localized poor air entery, crepitations or rhonchi in descending order of frequency. Most common finding in chest roentgenogram was consolidation - collapse and/or emphysema in 50% cases. 30% cases (n=6) with persistent respiratory tract infection inspite of adequate treatment of recurrent episodes of respiratory distress with wheeze turned out as foreign body inhalation and threfore, such cases need re-evaluation. Betelnut was the most common foreign body removed (n7) followed by peanut (n=6). Most frequent site invovied was right main bronchus (n=7) followed by left main bronchus (n=5).
Conclusion: Public awareness through mass media needs attention to prevent foreign body inhalation. High index of clinical suspician is mandatory for early diagnosis and management to prevent fatal outcome and long term morbidity (JPMA 49:33, 1999).

Introduction

Foreign body aspiration has remained a consistent problem since decades with 80% of all aspirations occuring in children[1]. It is associated with significant morbidity and mortality. In USA, 500-3000 children every year die of foreign body inhalation[2]. Akhtar J et al from National Institute of Child Health (NICH), Karachi have reported >8% mortality among 35 children with foreign body inhalation[3]. A definite history of sudden. onset of choking followed by cough, respiratory distress, localized wheeze and radiologically pulmonary collapse or emphysema makes the diagnosis easy. But we still come across many cases where the initial incident was either trivial, unobserved, forgotten by parents or remained undetected due to low index of clinical suspicion by the caring physician. These patients have been treated for years as recurrent or unresolved pneumonia[4,5], bronchial asthma[5] or pulmonary tuberculos is[6,7]. Undiagnosed impacted foreign bodies cause permanent lung damage resulting in lung abscess or bronchiectasis[8,9] requiring segmental/lobar resection or pneumonectomy[6,7]. Although pneumonia is the commonest cause of cough and respiratory distress in children, foreign body

inhalation is not an uncommon problem. In the absence of a clear history of foreign body inhalation which criteria should guide a physician to maintain high index of suspicion for foreign body inhalation to plan appropriate management and prevent its associated morbidity and mortality? With this objective, we conducted a prospective study on the profile and immediate outcome of children with suspected foreign body inhalation.

Patients and Methods

A prospective study was conducted at Paediatrics Department of Rawalpindi General Hospital, affiliated with Rawalpindi Medical College, during the years 1995 and 1996. In the absence of definite history of foreign body aspiration, study subjects were selected on the basis of sudden onset of cough and respiratory distress or their undue persistence/recurrence alongwith choking or localized poor air entry or radiological evidence of collapse, consolidation-collapse and/or emphysema. An ENT surgeon was consulted for all these cases. He did bronchoscopy with a paediatric rigid-ventilating bronchoscope (karl storz) for removal of foreign body. The procedure was done under general anaesthesia maintained with halothane and suxamethonium as a muscle relaxant. Postoperative care was provided in Paediatric unit. The data including age, sex, symptomatology, clinical and radiological findings, treatment received before and after hospitalization, site of foreign body impaction and its nature with outcome were recorded on a predesigned proforma.

Results

Out of 20 cases of suspected foreign body inhalation, 18 had foreign body aspiration, one left before bronchoscopy and in one foreign body was not found on bronchoscopy. Age of these patients ranged from 9 months to 5 years with a mean of 2 years. Thirteen were male and seven female (Table I).

Table I. Age and sex distribution of children with foreign body aspiration.

Age (years)	Sex		Total No.
	Male	Female	
0-<1	1	0	1
1-<2	7	1	8
2-<3	2	4	6
3-<4	1	0	1
4-<5	2	2	4
Total	13	7	20

Duration of symptoms varied from 2 hours to 7 days in 14 and 2 weeks to 6 months in 6 patients, the latter being persistent or recurrent. Most bronchi or crepitations (Table II).

Table II. Clinical presentation in children with foreign body inhalation.

Clinical presentation	No.
Tachypnoea	20
Lower chest indrawing	19
Respiratory distress	19
Cough	17
Poor air entry	13
Crepitations	10
Rhonchi	8
Fever	7
Wheeze	6
Stridor	5
Choking	3
Cyanosis	2

X-ray chest was normal in 9 cases. Of the remaining. 10 cases 6 had both collapse or consolidation collapse and emphysema (Figures 1 and 2).

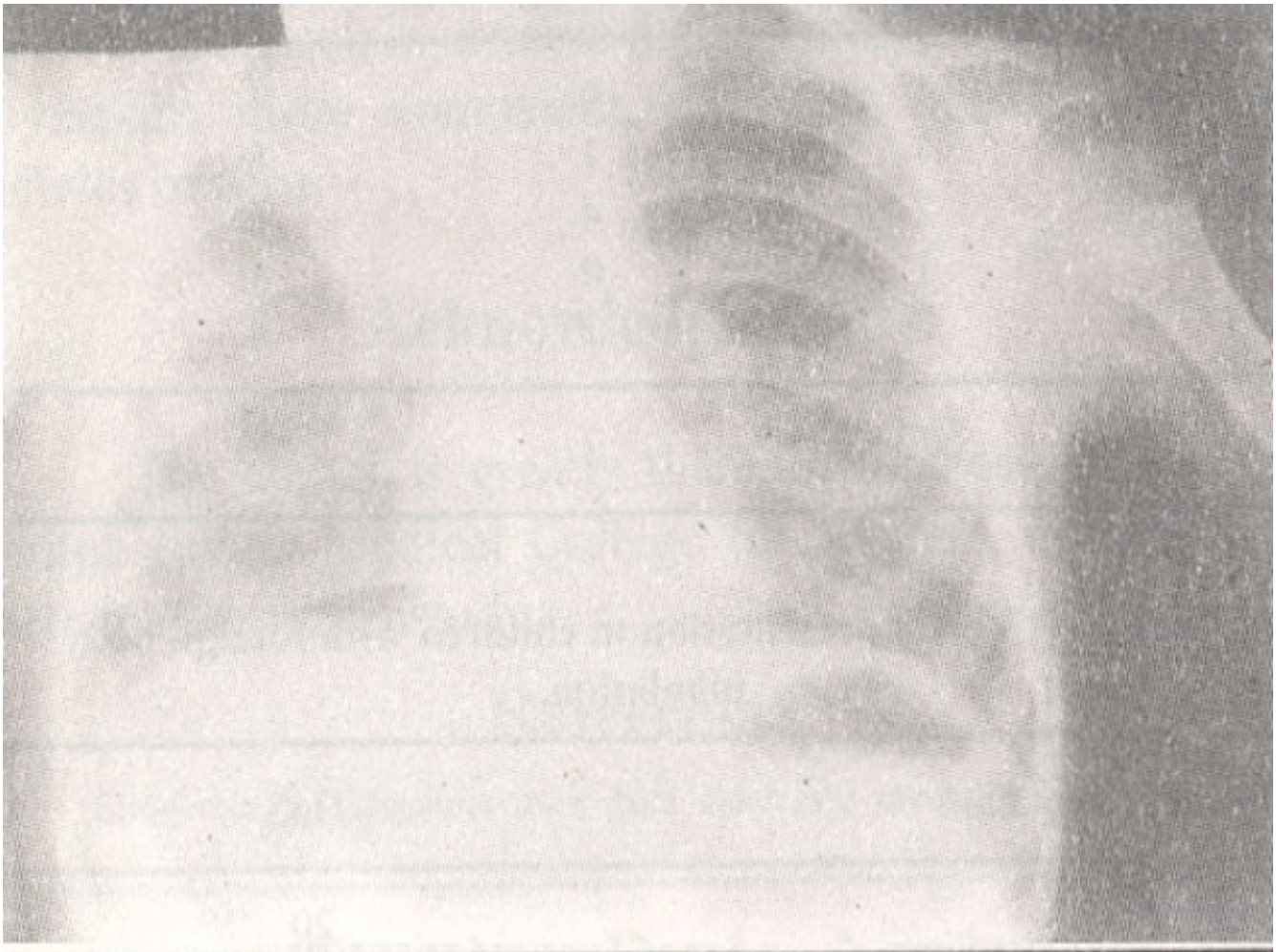

Figure 1. Consolidation-collapse of right upper lobe with trachea shifted to the right due to foreign body in right upper bronchus.

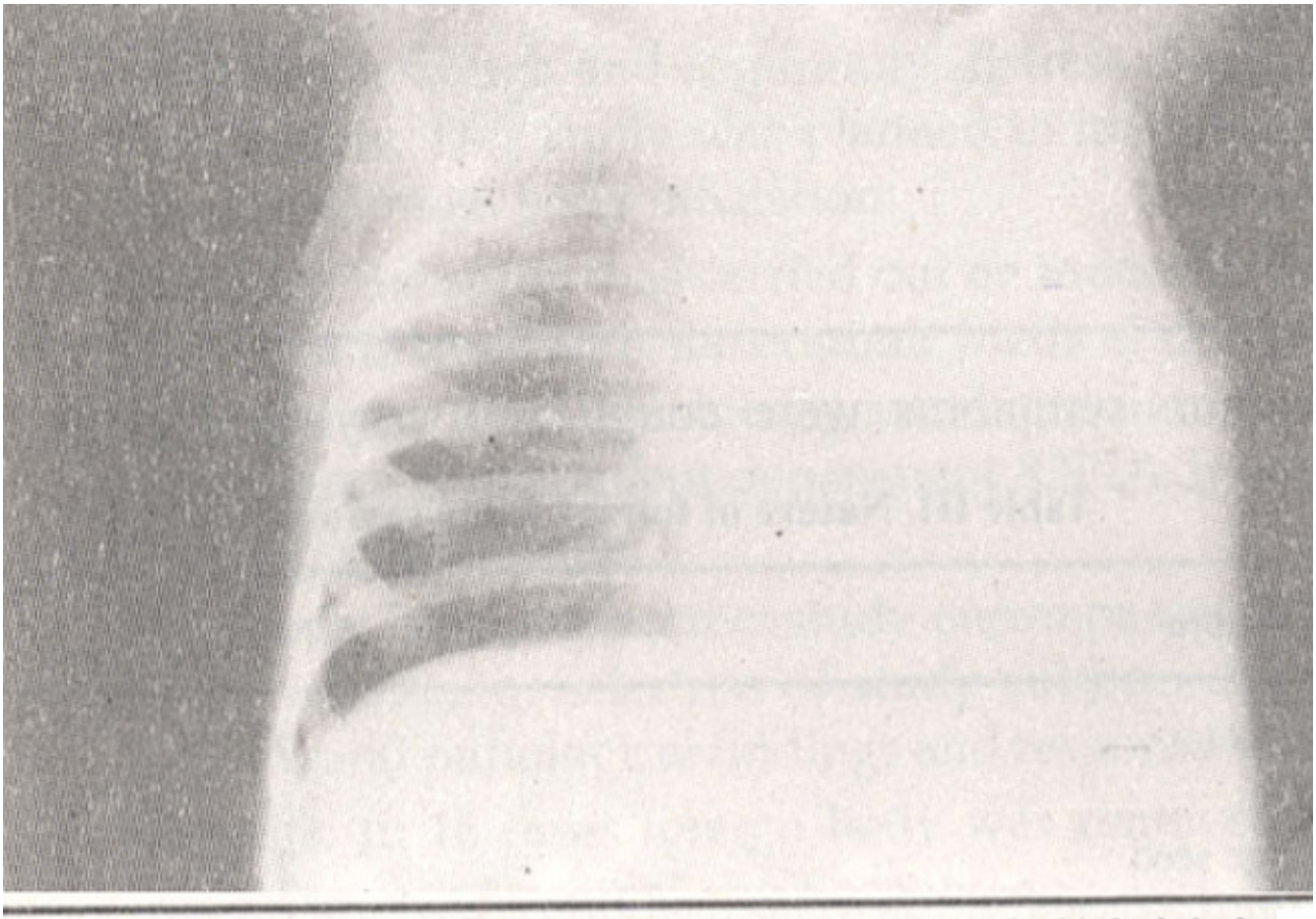

Figure 2. Collapse of left lung with mediastinal shift to the left due to foreign body in the left main bronchus. Compensatory emphysema of right lung.

History of choking followed by irritating cough and respiratory distress suggested foreign body inhalation in 7 cases. An initial diagnosis of severe pneumonia was made in 7 based on tachypnoea, lower chest indrawing and so were started on appropriate antibiotic therapy. Presence of stridor in 5 cases suggested viral croup. In all these cases possibility of foreign body inhalation was also considered because of sudden onset of cough and respiratory distress supported ;on admission or subsequently by localized findings of poor air entry, crepitations with or without rhonchi or radiological evidence of collapse, consolidation-collapse and/or emphysema. Persistent and prolonged symptoms in 3 cases with history of contact in two prompted the need to start them on antitubercular therapy. Lack of improvement with 4-6 weeks of treatment and presence of consolidation-collapse and/or emphysema in repeat x-ray necessitated bronchoscopy. Two cases were admitted as known cases of bronchial asthma. One also had choking spells with cyanosis during asthmatic attacks needing resuscitation and repeated hospitalization. Localized poor air entry with rhonchi and radiological findings suggested foreign body inhalation.

Nature and site of foreign body inhaled are shown in Table III and IV.

Table III. Nature of foreign body removed.

Nature	No.
Betelnut	7
Peanut	6
Orange seed	2
Maize seed	1
Plastic material	1
Metallic button	1

Table IV. Site of foreign body inhalation.

Site	No.
Right main bronchus	7
Left main bronchus	5
Both main bronchi	1
Right lower bronchus	2
Right upper bronchus	1
Carina of trachea	1
Inlet of larynx	1

One child developed cardiac arrest during bronchoscopy but prompt resuscitiation helped him to recover. Almost all patients had relief of symptoms following removal of foreign body with normal chest roentgenograms.

Discussion

Foreign body inhalation is a comon problem in children and at times a diagnostic challange[10-12]. Male preponderance may be attributable to their aggressive or explorable nature. In the absence of definite history of foreign body inhalation, choking or sudden onset of cough and respiratory distress with localized poor air entry, crepitations or ronchi remained vaiuable clinical indices for foreign body inhalation in this and other studies[13,14].

Although X-ray chest-may be normal in 1/3rd of cases with foreign body inhalation[5] and in this study it was so in 9 cases, it still remains the single most useful investigation to support the clinical diagnosis and prompt the need for confirmation and timely management through bronchoscopy.

Persistence of lower respiratory tract infection inspite of adequate treatment needs re-evaluation and due consideratin for foreign body inhalation. Similarly recurrent episodes of wheeze and respiratory distress and clinical or radiological evidence of localized airway obstruction provide solid grounds for foreign body inhalation. This approach is safe and prevents complications requiring complex surgical procedures. Most susceptible are males between the age of 1-3 years[3,10-12].

Betelnut was the most common foreign body removed followed by peanut as reported by others[13,15]. Most common site involved was right main bronchus followed by left main bronchus which is again supported by other studies[3,13,16]. Foreign body inhalation is preventable by creating public awareness through mass media about its serious consequences and parental education to keep small objects out of reach of children. Caring physician should maintain high index of clinical suspician for early diagnosis and management to avoid fatal outcome and long term morbidity. Bronchoscopic facility should be available at all hospitals with paediatric units.

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