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FOREIGN BODY INHALATION IN CHILDREN

1. YASMEEN MEMON
2. SALMA SHEIKH
3. KAMRAN QUERASHI
4. ROMANA QUERASHI

1. *Associate Professor*
Pediatric Unit 1
Liaquat University of Medical & Health Sciences, Hyderabad/ Jamshoro
2 *Professor of pediatric Unit 1*
Liaquat University of Medical & Health Sciences, Hyderabad/ Jamshoro
3 Liaquat University of Medical & Health Sciences, Hyderabad/ Jamshoro
4 Liaquat University of Medical & Health Sciences, Hyderabad/ Jamshoro

Corresponding Author
1 **Dr Yasmeen Memon**
MBBS, DCH, FCPS.
Associate Professor
Pediatric Unit 1 Liaquat University of Medical & Health Sciences, Hyderabad/Jamshoro
Phone #
Res: 0222631885
Mobile: 03313640466

ABSTRACT:

Objective: To study the clinical spectrum and outcome of foreign body aspiration in children.
Study Design: Descriptive Study
Place and duration of study: This study was conduction in Paediatric unit-I at Civil Hospital Hyderabad from May 2008 to May 2010
Patients and Method: During the study period 55 children's were admitted with suspected foreign body aspiration .Age cut off point was 6 year. Diagnosis was made on the basis of history, clinical features, chest radiographic evaluation and strong index of suspicion. Bronchoscopy was performed by ENT Surgeon and foreign bodies were removed under general anesthesia with rigid bronchoscope. Anti biotic and Oxygen were administered according to individual need of the patient.
Result: A review of 55 children of suspected foreign body aspiration revealed that children between 1 to 6 years found to be very vulnerable for aspiration. Majority were boys (60%) and 87.27% of children had positive history of foreign body inhalation. Common symptoms were respiratory distress(89%), cough (65.45% and wheeze (47.27%). On physical examination decreased air entry (87.27 %) was significant finding. Suggestive radiographic findings were hyperinflation (65%) on the side of entrapment of foreign body and lobar collapse (26%). In 36.36% cases foreign body was lodged in right main bronchus and bettle nut was the commonest foreign body recovered in 63.63 % of cases. The mortality rate was 5.45%.
Conclusion: Tracheobronchial. foreign body should be strongly suspected in children who present with sudden onset of respiratory distress or witnessing of choking episode even when radiography evidence is absent.

Keyword: Foreign body Bronchoscopy Outcome

INTRODUCTION:

Foreign body aspiration is a very serious, often life threatening and common problem in children that may also cause chronic lung disease.[1].Children are at risk due to their curious nature, strong tendency to put every thing into their mouth , lack of molar teeth and lack of supervision by adults [2].Age is the most important factor in the incidence of foreign body inhalation, it is common below the age of 5 years.[3] The Symptom and sign of foreign body aspiration may mimic those of asthma or Pneumonia but a careful history and clinical examination can identify those children that need bronchoscopy. Frequently there is history of foreign body aspiration with or without symptoms of cough or wheezing while patients with late presentation may have acute symptoms or may present with fever, difficulty in breathing, hemoptysis, pneumonia or lung abscess. Although many patients present with acute symptoms a significant number present at days or weeks later after the event so the diagnosis should be entertained in any patient with recurrent pulmonary symptoms that do not respond to the usual treatment. An early diagnosis and management of the children with an inhaled foreign body offers a

diagnostic challenge to the physician. A witnessed choking event is the most important information to make an early diagnosis of foreign body aspiration otherwise diagnosis and treatment depend on direct laryngoscopy and bronchoscopy. This study is a review of clinical data of children admitted to our hospital with suspected foreign body inhalation, to document the local experience of the most common object inhaled by children and its outcome.

PATIENT AND METHOD:

This descriptive study of foreign body inhalation in the tracheobronchial tree was carried out in Paediatric Unit-I Civil hospital Hyderabad. During the study period between May 2008 to May 2010 fifty five patients were admitted with suspected foreign body inhalation and after taking informed consent from parents of all the study participants data was collected regarding sex, age, duration of illness, observation of chocking event or history of chocking, physical findings, type and location of foreign body and the outcome of foreign body inhalation. Chest radiography and complete Blood count were performed and bronchoscopy was performed by ENT Surgeon, antibiotics, oxygen and steam inhalation was administered according to individual needs before and after Bronchoscopy.

RESULTS:

Out of the 55 patients in this study 33 (60%) were male and 23 (40%) were female. Age ranged between 1 to 6 years with a mean of 3.1 years. Majority 48 (87.27%) of the children were brought by the parents with history of inhalation of some form of foreign body. Sixteen (29%) patients were brought for help within 24 hours, 23 (41.81%) after 24 hours to within 1 week ,11 (20%) after 1 week to 1 month and 5(9.09%) were seen after one month. Difficulty in breathing was present in 49 (89%), cough in 36 (65.45%), wheeze in 26 (47.27%), chest in drawing in 35 (63.63%), fever in 23(41.81%), Choking in 19 (34.54%) and cyanosis was noted in 10(18.18%) patients. Severity of respiratory distress was assessed on the basis presence & severity of grunting , subcostal chest indrawing , xiphsternal indrawing , nasal flaring and asynchronization of chest. Severe respiratory distress was observed in 36 (64.45%),moderate in 6(13.04%) mild in 5(9.09%) and respiratory failure in 2(3.63%). There was decreased air entry in 48 (87.27%) Ronchi in 15 (27.27%), Creptitations in 14 (25.45%) grunting in 1 (1.81%) and change of voice in 2 (3.63%) patients. Two (3.36%) patients presented with gasping condition (Table 1). Chest radiograph was normal is 4 (8.69%) , thirty (65%) patient had hyperinflation on the side of entrapment of foreign body ,lobar collapse was found in 12 (26%), infiltration in 11 (23.91) ,mediastinal shift in 6 (13.04%) patients while in 9 (16.36%) patients X-ray was not done.(Table 2).

Bronchoscopy was done in 46 (83.63%) children and foreign body was recovered in 41 (74.54%) patients, out of these 41 patients 39 had positive history of foreign body aspiration. In 5 (9.09%) patients no foreign body was recovered on broncoscopy only mucoprulent secretion was recovered and history of foreign body aspiration was positive in 4 (8.69%) of them. Bronchoscopy was not done in 9 (16.36%) children ,among these 2 (3.36%) children were received in gasping and expired before bronchoscopy , both have history of foreign body aspiration, 6 (13.04%) patients left against medical advise without bronchoscopy, among them 2 (3.36%) have history of foreign body aspiration.

Four children's were referred to Karachi , the reason of referral was recovery of only mucoprulent secretion and clot in 2 patient on bronchoscopy and no improvement in clinical condition , in 3rd patient the foreign body get dislodged into left bronchus during bronchoscopy and not recovered so referred while 4rth patient was referred on parents request .

During bronchscopy 20 (36.36%) patient had the foreign body in the right main bronchus , 13 (23.63%) in left main bronchus, 5 (9.09%) in trachea, 2 (3.63%) in subglottic area , 1 (1.81%) in carina. (Table 3)

The objects recovered on bronchoscopy were bettle nut in 35 (63.63%) cases followed by Peanut in 3 (5.45%), pieces of meat & bone in 3 (5.45%) patient. In 5 (9.09%) patients no foreign body was recovered only thick muco prulent secretion were recovered. One child (1.81%) had surgical emphysema after brochoscopy which resolved by conservative management. The time interval between aspiration and removal of foreign body ranged between 24 hours and 9 month.

Three patients (5.45%) died. One after bronchoscopy with recovery of foreign body due to apnea, other 2 (3.63%) were received in gasping condition and died before bronchoscopy.

Table 1. Clinical Features of Children with Foreign Body Aspiration

Clinical Features	Number	%
Difficulty in breathing	49	89%
Decreased air entry	48	87.27%
cough	36	65.45%
Sub costal indrawing	35	63.63%
Wheeze	26	47.27%
Fever	23	41.81%
Choking	19	34.45%
Rhonchi	15	27.27%
Crepitations	14	25.45%
Cyanosis	10	18.18%
Chang in voice	02	3.36%
Gasping	02	3.36%
Grunting	01	1.81%

Table 2. Chest Radiographic finding in children with foreign body aspiration

CXR finding	No	%
Normal	4	8.69%
Hyperinflation	30	65%
Lobar collapse	12	26%
Infiltration	11	23.91%
Mediastinal shift	06	13.04%

Table 3. Location of Foreign Body

location	Number	%
Right main bronchus	20	36.36%
Left main bronchus	13	23.63%
Trachea	05	9.09%
Subglottic area	02	3.63%
Carina	01	1.81%

DISCUSSION:

Foreign body aspiration is an important cause of children morbidity and mortality under 5 years of age. Our study of foreign body in airway confirm the finding of other studies that majority of children presenting with foreign body inhalation are <5 years [4] .The male to female also was 1.9:1 that is not significantly different from other studies [5-7].

Chest radiography is not much helpful for diagnosis of foreign body inhalation because most foreign body inhaled by children are radio lucent however it is useful for detecting indirect sign of foreign body aspiration such as hyper inflation and atelactasis .More over a normal chest radiograph does not rule out foreign body. In our study hyper inflation was the commonest fining which is consistent with other study [8,] while normal chest radiograph was seen in our study in 4 (8.69%) patient. In other studies chest radiograph was reported normal in 9-30% cases [9,10]. Therefore bronchoscopy is indicated in cases where history is suggestive of foreign body aspiration [11 .]

In our study common clinical presentation include dyspnea, cough, wheeze and decreased air entry, these findings are similar to other study.[12]

Foreign body can be misdiagnosed as pneumonia, asthma, T.B, croup and delay in diagnosis is associated with increased morbidity and un necessary use of drugs specially antituberculous.[13] In our study delay in diagnosis range from 25 days to 9 month was seen in 8(14.54%) patient who received treatment for bronchial asthma, antibiotic and in 3(5.45%) of them antituberculous drugs were started with no improvement in symptoms. In our study no mortality occurs in patient with delayed diagnosis. Therefore it is important to suspect chronic foreign body aspiration in children who present with unexplained recurrent Pneumonia.

In our study the common site of involvement by foreign body are right main bronchus followed by left main bronchus, trachea and, subglottic area . Study at PIMS Islamabad by Ilyas Badar reveals that 61% patient had foreign body in right main bronchus, 10% in left main bronchus and 5.5% in trachea.

The most common foreign body in our study was bettle nut followed by pea nuts and pieces of bone and meat while no patient had inhalation of toy whistle. In western countries Peanut was the most common encountered foreign body while in Saudi children it has been reported to be water melon seeds.[14]

Majority (81.81%) of patient improve following removal of foreign body on broncho- scopy in our study. The mortality rate in this study was 5.45% which is significant when compared with other studies done in our country and other part of world where no mortality was reported [15]. This indicate that there is need to educate parents on the potential risk involved in foreign body inhalation and advise them to keep small object out of their children's reach. In addition there is need for availability of proper broncoscope and anesthetic facility in hospitals along with urgent referral services for those patients who have to travel long distance to utilize these facilities.

CONCLUSION:

It is concluded that easy availability of bettle nuts in attractive packing and lack of supervision by parents along with non existent law with regard to sale of bettle nuts to children, and unavailability of facilities for bronchoscopy are the main factors which are associated with this common and avoidable problem in children. Primary care physician must help to educate parents of small children about the potential for foreign body aspiration and ways to prevent it.

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