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Original article:

Study of clinical presentation of foreign body aspiration in different age group

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Abstract:

Introduction: Tracheobronchial foreign body is one of the most common paediatric emergency. The incidence of foreign body aspiration in children has not changed significantly over years and is unlikely to be so as long as young children use their mouths to explore their surroundings as they are orally oriented toddlers.

Material and methods: Present study includes 40 patients with foreign body aspiration, who subsequently underwent rigid bronchoscopy. This study was conducted in Department of Otorhinolaryngology over a period of two and half years in a tertiary care hospital. These patients were examined clinically, radiological and other necessary investigations were carried out.

Results: The highest incidence of FB aspiration in present study was in the age group of 1- 3 years (65%), followed by 0 - 1 years (15%). Youngest patient was of 7 months and the oldest was 50 years. Present study includes male predominance i.e. 60%, with male to female ratio 1.5:1. Only 65% patients had positive history of foreign body aspiration whereas 35% patients had no history of FB aspiration.

Conclusion: It can be concluded that foreign body aspiration is a serious and potentially fatal condition, especially when occurring in a small child. A history of an acute episode of coughing, choking commonly over food material, dyspnoea and a respiratory tract infection not responding to routine treatment are the alarming symptoms in a case of foreign body aspiration which are not be overlooked.

Introduction:

Foreign body in airways is a potentially life threatening emergency. The incidence of foreign body aspiration in children has not changed significantly over years and is unlikely to be so as long as young children use their mouths to explore their surroundings as they are orally oriented toddlers.[1] Foreign body in airways continue to be a diagnostic and therapeutic challenge for the practicing otolaryngologist.(2) Tracheobronchial foreign body aspiration accounts for high incidence, morbidity and mortality in children despite significant advances in prevention, first aid and endoscopic technology.[3]

Foreign body aspiration can result in a spectrum of presentations, from minimal symptoms, often unobserved, to respiratory compromise, failure, and even death. The symptoms and signs produced depend upon the nature, size,

location and time since lodgment of tracheobronchial foreign body. [1] The peak age incidence of airway foreign body aspiration is in between 1 and 3 years but any age can be affected. [4]

It occurs more commonly in children under the age of four, owing to their insufficient airway protection reflex, poor chewing ability, and harmful habit of exploring objects using their molar-free mouth, as well as eating while playing or crying.(5) Tracheobronchial foreign body aspiration may lead to serious complications such as airway inflammation, hemoptysis, bronchiectasis, pulmonary atelectasis, and even asphyxia and death.(6,7) Foreign body aspiration claims thousands of lives each year, because they rarely reach in time for intervention. The type of foreign body inhaled depends upon the nature of environment in which the child finds itself. Vegetative foreign bodies predominate rural areas whereas pins and coins are common in urban population. Vegetative foreign body can cause rapid obstructive changes due to combination of mucosal irritation and swelling by hygroscopic action. The diagnosis of tracheobronchial foreign body requires high index of suspicion, even in the absence of a positive history to prevent morbidity and mortality due to delayed diagnosis.

Material and methods:

In our study, 40 patients presenting with foreign body aspiration will be included in the study. It was Prospective study

Inclusion Criteria -

Patients of all age groups having a foreign body in trachea or bronchi were included in the study.

Exclusion Criteria

Patients having foreign body in nose and nasopharynx were excluded from the study.

- Detailed history was taken and clinical examination was done.
- Appropriate radiological investigations were done in all cases.
- Patient was managed by rigid bronchoscopy.

Conventionally, after aspiration, three definitive clinical phases occur. First phase includes acute and severe coughing. In second phase the foreign body settles and immediate stimulative symptoms subside. The third phase is of complications like infection.

Findings were analyzed using proper statistical tests.

In present study a total number of 40 cases of foreign body aspiration were diagnosed and assessed.

Results:

In present study includes 40 patients with foreign body aspiration, who subsequently underwent rigid bronchoscopy. This study was conducted in Department of Otorhinolaryngology over a period of two and half years in a tertiary care hospital. These patients were examined clinically, radiological and blood investigations were carried out. Observation and results of present study are as follow:

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Table 1: Distribution of cases according to age

Age (in years)	Number of cases	Percentage (%)
0 - 1 year	06	15
1-3 years	26	65
4-6 years	05	12.5
7-9 years	01	2.5
10-12 years	0	0
More than 12 years	02	5
Total	**40**	**100**

The highest incidence of FB aspiration in present study was in the age group of 1- 3 years (65%), followed by 0 - 1 years (15%). Youngest patient was of 7 months and the oldest was 50 years.

Table 2: Distribution of cases according to gender.

Gender of case	Number of cases	Percentage (%)
Male	24	60
Female	16	40
Total	**40**	**100**

Present study includes male predominance i.e. 60%, with male to female ratio 1.5:1

Table 3: Distribution of cases according to history of foreign body aspiration.

History of aspiration	No. of cases	Percentage (%)
Positive	26	65
Negative	14	35
Total	**40**	**100**

Only 65% patients had positive history of foreign body aspiration whereas 35% patients had no history of FB aspiration.

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Table 4: Distribution of cases according to their clinical symptoms

Clinical symptoms	No. of patients (n=40)	Percentage (%)
Cough	36	90
Breathlessness	25	65
Choking	16	40
Fever	10	25
Vomiting	1	2.5

Most of the patients presented with more than one clinical symptoms of foreign body aspiration.

90% patients had history of cough after FB aspiration. Breathlessness (65%) was the next common symptoms after foreign body aspiration followed by choking (40%). whereas 25% patients had fever after foreign body aspiration.

Table 5: Distribution of cases according to clinical signs.

Signs	No. of cases (n=40)	Percentage (%)
Decreased air entry on the affected side (DA)	34	85
Tachypnea	30	75
Wheeze	18	45
Intercostal Indrawing (ICI)	10	25
Rhonchi	06	15
Crepitations	06	15
Stridor	01	2.5

Most of the patients presented with more than one clinical sign of foreign body aspiration.

Most of the patients presented with decrease air entry on affected side (85%) after foreign body aspiration. 75% of patients had tachypnea, 45% patients had wheeze after aspiration. 25% patients had intercostal indrawing and 15% had rhonchi, and crepitations were present in 15% cases. Stridor (2.5%) was the least common sign in present study.

Table 6: Distribution of cases according to duration of complaints.

Duration of complaints	**Number of cases (n =40)**	**Percentage (%)**
0 -6 hrs	02	5
6-24 hrs	18	45
1-5 days	14	35
5-10 days	04	10
More than 10 days	02	5
Total	**40**	**100**

Discussion:

Incidence of foreign body aspiration is more common in children. In present study, youngest case was 7 months old & oldest case was 50 years. Highest incidence was in the age group 1-3 years (65%), followed by 0 - 1 years (15%). In the present study, the commonest age group was 1 to 3 years, which is similar to other studies. In a study by Saki et al [(8)], 1015 cases with the diagnosis of FBA were evaluated during January 1988 to November 2008. The age distribution of study groups included, 218 (21.5%) patients less than 1 year age, 556 (54.8%) of the cases were 1 to 3 years following with 160 (15.8%) cases in 3 to 6 years of age range and 81 (7.9%) of the patients were more than 6 years of age. The maximum incidents occurred at the age of 1-3 years with a value of 556 cases (54.8%).

In study by Srivastava et al [(9)], the maximum number of cases, 61 out of 100 cases were in the age group 1-5 years. Jianmin Liang et al [(10)] in his retrospective study of 2000 patients of TBA, reported 72.5 % cases in age group between 1 to 3 years. Soudabeh Haddadi et al [(11)] also reported 66.2% of cases between 1 to 3 years of age. Due to lack of molar teeth, infants and younger children have poor ability of chewing. Their airway protection reflex has not been well developed. Additionally, they are interested in and tend to explore environmental objects with mouth.[(12)] These factors contribute to higher incidence of tracheobronchial FB in young children.

Small spherical food items, such as nuts of seeds, are the most likely to cause airway obstruction & asphyxia. All the foods should be avoided until the child is able to chew them adequately while sitting. Generally chewing & swallowing becomes more coordinated around the age of 5 years. Therefore, care givers should be informed that children under the age of 4 should never eat nuts or other round, crunchy foods, making prevention the most effective treatment of FB injuries[(13)].In adults, FB aspiration is a rarely encountered due to well developed neuromechanism. Risk factors for aspiration in the adult population include mental retardation, dementia, altered

mental status, neurological disorders, recent dental manipulation, alcohol and drug use, laryngectomy and tracheostomy [14]. Incidence of foreign body aspiration is more common in males with male to female ratio of 1.5:1. Their adventurous and impulsive behavior may justify the ratio. Similar results were observed in studies by Srivastava et al[9], Saki et al[8] and Soudabeh Haddadi et al[11].

History of foreign body aspiration was present in 65% cases. Foreign body may escape both the parents and physician's notice, because of lack of knowledge of the exact history and inconclusive radiographic findings. In a retrospective study by Kaur et al[15], 76% had positive history of aspiration.

In the present study, most common symptom was cough (90%) followed by breathlessness in 65% & choking in 40%. Fever was seen in 25% & vomiting in 2.5%. Most of the patients presented with decreased air entry on affected side (85%) after foreign body aspiration. 75% of patients had tachypnea, 45% patients had wheeze after aspiration. 25% patients had intercostal indrawing and 15% had rhonchi, crepitations was seen in 15% cases. Stridor (2.5%) was least common sign in present study. Sumanth et al[16] reported cough and breathlessness to be the commonest symptoms accounting for 90% of the cases. In a similar study by Srivastava et al[9], all patients presented with a varying degree of respiratory distress. Duration of complaints is defined as time interval since first symptom suggestive of FB aspiration and the presentation to otolaryngology department. Only 50 % patients presented within 24 hours of FB aspiration in hospital, whereas 35% patients came after 1 to 5 days of aspiration. 10 % patients came after 5 to 10 days of FB aspiration. 5 % patients presented later than 10 days after aspiration. Jose's et[17] al reported that 25% of the foreign body aspiration was not diagnosed in the first visit, despite the existence of typical symptoms. Soysal et al[18] reported that only 55.7% patients presented within 24 hours of foreign body aspiration. Amit I Naragund et al[19] reported that most of the cases were consulted to hospital between 8 to 15 days.

These foreign bodies are best managed by rigid bronchoscopy, which in experienced hands is the most effective modality of treatment. Associated factors like age of patient, type of FB, time interval between aspiration and treatment & high index of suspicion also play a key role.

Conclusion:

It can be concluded that foreign body aspiration is a serious and potentially fatal condition. A history of an acute episode of coughing, choking commonly over food material, dyspnoea and a respiratory tract infection not responding to routine treatment are the alarming symptoms in a case of foreign body aspiration which are not be overlooked. The time of presentation, early diagnosis with high index of suspicion and early treatment help in reducing complications of foreign body aspirations.

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