

Foreign Bodies Inhalation

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Summary:

Background: foreign bodies Inhalation still a common problem in Iraq, occurring in both lay and professional segments of our society. Their successful removal is based on a collected experience of our thoracic surgical teams.

Patients&Methods: A prospective study of two hundred forty eight patients referred to the department of thoracic surgery of the surgical subspecialties hospital of the medical city teaching complex during the year (2007) due to witnessed or suspicion of foreign body inhalation. Patients were grouped into group 1 with definite history of foreign body inhalation and group 2 with no such history.

Results: In group 1, out of 203(81.85%) patients, about 169(83.25%) patients were proved to have foreign body inhalation by rigid bronchoscopy, while in group 2,foreign body inhalation were proved in 14(31.11%) patients out of 45(18.14%) patients. The commonest age group of foreign body Inhalation was 6 months - two years (63.93%), and males to female ratio was 1.8:1. The highest peaks were encounter in July and August. The results of chest X-ray were normal in (53.55%) of cases and the most common radiological abnormality was pneumonic consolidation which was seen in (15.84%) of cases. Organic foreign bodies were representing (86.3%), the commonest organic foreign body was watermelon seed (48.65%), and the common site of foreign body lodgment was the right main bronchus.

Conclusion: The mere suspicion of a foreign body Inhalation is a justification for bronchoscopy. A negative bronchoscopy is better than to leave it inside with its serious sequels.

Keywords: Foreign body (FB), Bronchoscopy

Fac Med Baghdad
2010; Vol. 52, No. 3
Received Apr. 2010
Accepted June 2010

Introduction:

Foreign body inhalation is the cause of death for more than 300 children each year in the united state. The relative incidence of F.B gradually diminishes as the child reaches school age (1).The well known tendency for young children to place loose objects in their mouth may lead to aspiration of these objects into trachiobronchial tree and this is one of the leading and common cause of accidental death in children under six years of age (2,3). In Iraq and in most middle east countries the prevalence of trachiobronchial FB in children is high, due to poor parental attention and dietary habits carelessness, negligence and ignorance are responsible for most FB accidents, and the majority occurred in the poor and in those who may not have sufficient knowledge to realize the dangers of such accident (4).

Patients and Methods:

This is a prospective study of (248) patients with a positive or suspicious history. Of FB inhalation. Patients were admitted to the thoracic department of the surgical subspecialties hospital of the medical city teaching complex. Patients were clinically evaluated and a special formula was used to divide them according to their age, gender, residence, and date of admission. Those patients were separated into two categories group 1 with definite history of FB inhalation and group 2 with negative history but with resistant or recurrent chest infection with no response to an appropriate medical treatment. All the patients were X- rayed prior to bronchoscopy.

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All patients were managed as an emergency cases, bronchoscopy was arranged after few hours of preparation except those who is presented with distress or stridor for whom immediate Bronchoscopy was performed. Bronchoscopy was performed in all cases with positive history or those with recurrent chest infection not responding to a proper medical treatment for two weeks. Adequate preparation of the child and the instruments in use are important so that the procedure will be safe and successful. Preoperative assessment of the respiratory status include the severity of air way obstruction and the level of consciousness prior to anesthetizing the child, nature, location of F.B as well as oral intake status were reviewed. During this procedure which was carried under general anesthesia, pulse rate, rhythm, oxygen saturation and patient color were monitored continuously until spontaneous adequate respiration has recurred and consciousness regained. The majority of patients tolerate the procedure well. Types, sites of the F.B impaction and any post bronchoscopic complication were all reported. The majority were discharged back home within 24 hours.

Results

One hundred sixty patients were males while female patients were eighty eight so males predominate over females in a ratio of 1.8: 1

Three patients were under six months of age and ten patients were above 6 years old. The majority were between 6 months and two years which constitutes (63.93%) of our patients. The age distribution of these patients is shown in table (1).

More than (50%) of our patients presented early within the first three days of the aspiration. The rest were presented at a variable period ranging from two weeks to more than three months following the inhalation as shown in table (2).

More than one- third of the patients were presented during summer season and especially during July and August.

Group 1: (203) patients had a positive history of FB inhalation but a positive bronchoscopic finding was only seen in (83.25%) of them. In group 2 with a negative history which consists of (45) patient, about one third of them (31.11%) had a positive bronchoscopic finding of F.B. The relation between history of F.B inhalation and bronchoscope findings shown in table (3).

Radiological appearances were variable from normal to totally abnormal X-ray. The radiological findings of the chest x-ray are shown on table (4).

The right main bronchus was the commonest site for F.B impaction which is seen in 101 patients (55.2%) this followed by the left main bronchus in (26.2%) as shown in table (5).

Different kinds of foreign bodies were removed bronchoscopically, their types, numbers and percentages are illustrated in table (4), which demonstrates that organic foreign bodies represent (82.2%) of them and the commonest F.B. removed bronchoscopically was water melon seed which constitutes (48.63%) as shown in table (6).

The presence of endobronchial foreign bodies has led to a variety of complications which may be immediate leading to severe shortness of breath and distress or late leading to varieties of complication like (recurrent chest infection, atelectasis, and bronchial stenosis secondary to granulation tissue formation at the site of F.B impaction).

Stricture and Tracheo- esophageal fistula formation were seen in the complications. The types, number and percentage of these complication is illustrated in table (7).

The procedure of rigid bronchoscope under general anesthesia went smooth except the occurrence of cardiac stand still in three patients which resuscitated successfully. Post bronchoscopic stridor was seen in 29 patients (11.48%) who responded nicely to O2 Nebulizer and steroid administration.

Table (1): Age distribution of patients with positive bronchoscopic finding:

Age	No.	%
<6	3	1.63
6 month- 2year	117	63.93
2-4 year	42	22.95
4-6 year	11	6.01
6 - +	10	5.46
Total	183	100

Table No. (2) Show the duration of the foreign bodies inhalation.

Duration	No. of cases	%
< 12hr	13	7.10
12-24 hr	33	18.03
1-3 days	47	25.69
3-7 days	17	9.29
7-30 days	45	24.59
1-3 months	18	9.84
> 3months	10	5.46
Total	183	100

About 50.8% seen within the first three days

Table (3): The relation between history of inhalation and bronchoscopic results.

History of foreign body inhalation	No.	%	Bronchoscope result	No.	%
Group 1	203	82	+ve	169	83.25
			-ve	34	16.75
Group 2	45	18	+ve	14	31.11
			-ve	31	68.89
Total	248	100	+ve	183	73.2
			-ve	65	26

Table (4): The radiological findings:

Radiological findings	No.	%
Normal	98	53.55
Pneumonia	29	15.84
Emphysema	28	15.3
Atelectasis	21	11.47
Radiopaque foreign body	6	3.27
Bronchiectasis	1	0.54
Total	183	100

Table No. (5). Distribution of foreign bodies according to site of impaction.

Site	No.	%
Right main bronchus	101	55.2
Left main bronchus	48	26.2
Tracheal	17	9.3
Laryngeal	11	6
Subglottic	6	3.3
Total	183	100

Table (6): Types of inhaled foreign bodies:

Type of foreign body	No.	%
Organic (vegetable)		
Watermelon seeds	89	48.63
Sun flower seeds	29	15.84
Other seeds (Rice, sessi, orange)	5	2.73
Nut (peanuts, almond, pistachio)	30	16.39
	5	2.73
Non Organic (Non vegetable)		
Metallic (screw, pin, clip, foil)	4	2.18
Beads	6	3.27
Food particles (egg shell, bone, meat)	5	2.73
Other (pieces of plastic, nylon)	10	5.46
Total	183	100

Table (7): Number and percentage of complications of F.B inhalation:

		No.	%
Immediate	Sever respiratory distress	2	1.09
Later	Recurrent persistent chest infection	26	14.2
	Atelectasis	21	11.47
	Bronchial stenosis	3	1.6
	Stricture	1	0.54
	Tracheo- Esophageal fistula	1	0.54
	Bronchiectasis	1	0.54

Discussion

Foreign body aspiration is one of the leading causes of death in children, especially among those younger than 3 years of age (5).

Foreign body inhalation is still common in our country with highest peak in July and August. Deferent kinds of foreign bodies were removed; the commonest was the water melon seeds which constitute (48.63%) of the patients. The second most common was the sun flower seeds which constitutes (15.84%) of the patient, and these figures are similar to a study by Elhassani (4) and Hussein (6) but differ from Holmes study (7) in which the peanut was the commonest foreign body removed constituting (36%) of the cases and this difference may be explained by the difference in dietary habits.

Foreign body inhalation can occur in any age group (8, 9), however children predominates especially in the age group below three years with boys are more commonly affected than girls (8, 10, 11), but in our study the commonest age group was six month – 2 years (63.93%) and males also predominate over female with a ratio 1.8:1 which can be explained by the over activity of the male child. The high incidence of foreign body inhalation in young children explained by the natural propensity of them of putting any things they encountered into their mouth and natural habit of talking crying, shouting during meals and the tendency of parents to thump their children for acts of naughtiness at feeding time all may predispose to foreign body accident (12,13,14).

The most important parameter in the diagnosis of FB inhalation is the history and in our study more than (80%) of our patients gave a history of F.B inhalation and in (83.25%) of them F.B was extracted by bronchoscopy. Those with a negative history which composes (20%) of our patient, they were bronchoscoped and a foreign body was found in one third of the patient. Our figure is less than results obtained by Elhassani and Hussein (4, 6), with positive bronchoscopic findings of the entire patient with positive history. This difference may be attributed to over awareness of the people and over diagnosis by medical staff or the F.B already coughed out after the incident without being noticed by the parents.

Chest radiograph was taken to all of our patients prior to bronchoscopy and this is mandatory to asses the nature of the F.B, its position and any associated pulmonary pathology (15). Normal chest X-ray was seen in 98 patients (53.55%) and this in agreement

with others studies (4, 6). Changes in the lung secondary to the presence of F.B such as pneumonic, Emphysema and atelectasis were seen in (31.4%) of the patients.

The right main bronchus was the commonest site for F.B impaction which is seen in 101 patients (55.2%) this followed by the left main bronchus in (26.2%) of our patients theses percentages is lesser than that obtained by others studies (8)(16). Tracheal F.B was seen in only seventeen patients (9.3%) which is close to that obtained by Blazer study (17). The least common F.B was the laryngeal one which was seen in 11 patients (6%) and this is comparable to others studies (6) (18).

No mortality is reported in our patient in contrary to the study done by Erens est al (19), who reported two deaths following bronchial rupture.

The successful results can be attributed to early diagnosis, quick bronchoscopic intervention the setting of our bronchoscopy suit and well trained staff.

In conclusion the mere suspicion of a foreign body inhalation is a justification for bronchoscopy; it is preferable to perform it rather than to wait, thus avoiding the risk of asphyxia or any other serious complications.

Nearly all the cases could be preventable and the followings are recommended.

1. F.B should not be within the reach of children. Kids should be watched carefully.
2. There should be a better referral system and a better management plan in the pediatric hospital prior to referring a baby as a suspected case of F.B inhalation.
3. Educational program must be instituted explaining the preventive measures and the risk of F.B inhalation.

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