ORIGINAL ARTICLE

FOREIGN BODY LOWER RESPIRATORY TRACT: SUSPICION SCORING SYSTEM

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ABSTRACT: Foreign body aspiration accidents are due mainly to carelessness of the parents to give children unsuitable articles or inedible objects to eat or play with. Bronchoscopists have removed variety of objects from the tracheobronchial tree ranging from beans, nuts, seeds, bone pieces, toys, teeth, pencil caps, nails pins, tracheostomy tubes etc. types of foreign bodies also have changing trend. Plastic foreign bodies are making their appearance more and more. A diagnosis of foreign body in the lower air way should not be arrived at by "exclusion"; as is presently done. But it should always be kept in mind as a distinct possibility and proactively ruled out. We thought of developing a scoring system which would take in to account various parameters & help the clinician in suspecting the possibility of foreign body in the bronchus. Foreign body in the tracheobronchial tree is potentially a fatal condition if not managed properly. A foreign body in bronchus can simulate other respiratory diseases and is likely missed, if medical treatment does not carry index of suspicion.

KEYWORDS: History of foreign body aspiration, signs, symptoms, X-ray finding, indication for bronchoscopy.

INTRODUCTION: Problems of dealing with the foreign body either swallowed or aspirated are as old as humanity. In such cases no definitive treatment was available, and mortality and morbidity was very high. Some manoeuvres like making the child inverted, and patting the back, putting the finger in the pharynx, etc. were tried. Rational management for such cases started only after Gustav Killian performed first bronchoscopy to remove a foreign body in 1897.

Though bronchoscopy remains the mainstay treatment even today, advances in bronchoscopes, forceps, anesthesia techniques, higher broad spectrum antibiotics and corticosteroids have increased the efficacy of the procedure to a great extent.

In this study an attempt is made to follow up the present trend of diagnosis based on history, clinical features and x-ray finding analyzing them and coming to a conclusion to take the patient for bronchoscopy or not, hence suspicion scoring system.

AIMS & OBJECTIVES: To develop definitive criteria to suspect a foreign body in a patient as to submit for bronchoscopy.

MATERIALS AND METHODS: Both prospective as well as retrospective study of patients having airway obstruction due to foreign body in the lower respiratory tract.

Prospective study: This study consisted of 24 patients of which 14 were males and 10 were females. These patients attended ENT Department of, our institute at Bijapur during the study period i.e., January 1999 to December 2000.

Inclusion criteria: All the patients in whom foreign body was found on rigid bronchoscopy were included in the study group.

Exclusion criteria: Patients in whom history and clinical features were suggestive of foreign body aspiration, but foreign body was not found on bronchoscopic examination were excluded from the study.

Thorough history was taken on admission including name, age, and sex and putting stress on presence or absence of history of foreign body aspiration. Even doubtful retrospective history of aspiration was also obtained by repeatedly questioning the patients and relatives. All the relevant complaints on admission like cough, breathlessness, fever etc., were enquired. All the patients were thoroughly examined giving more stress on respiratory system like mediastinal shift, decreased air entry, adventitious sounds, vocal fremitus and vocal resonance.

For most of the patients X-Ray chest PA view was taken and studied. In some patients where acute respiratory distress was present, X-Ray chest was not taken and instead sent to operation theatre for removal of foreign body after making provisional diagnosis, patients were posted for Rigid Bronchoscopy under General Anesthesia using appropriate size of bronchoscope, appropriate forceps noting its nature, size and site of lodgment.

Patients were put on antibiotics and steroids with chest physiotherapy.

RETROSPECTIVE STUDY: This study consists of 202 patients who had airway obstruction due to foreign body in the lower respiratory tract.

All the required relevant information was collected as per in the prospective study from the case records.

OBSERVATIONS: History of aspiration; In our present study 99 patients had positive history of aspiration, of the remaining 127 patients 62 of them gave doubtful retrospective history of aspiration and 61 patients did not have any history of aspiration.

	Retrospective		**Prospective**	
History of aspiration	**No. of cases**	**% Age**	**No. of cases**	**% Age**
Positive history	86	43	13	54
Retrospective\ prospective history	55	27	7	29
negative history	61	30	4	17
Total	**202**	**100**	**24**	**100**

SYMPTOMS TABLE: Commonest symptom come across in our study was cough followed by breathlessness and fever. In 59 patients cough breathlessness and fever all three were present and only 44 patients had cough and breathlessness.

	Retrospective		Prospective	
Symptoms	**No. of cases**	**% age**	**No. of cases**	**% age**
breathlessness	122	60.4	20	83.3
wheeze	29	14.4	3	12.5
cough	164	81.2	22	91.7
Fever	100	49.5	11	45.8
Recurrent LRI	7	3.5	0	0.0

SIGNS TABLE: Decreased air entry on one side was observed to be the most significant and common sign in our study. In retrospective 77.7% and prospective study 87.5% of patient's adventitious sounds were also significantly observed.

	Retrospective		Prospective	
Signs	**No. of cases**	**% age**	**No. of cases**	**% age**
Dyspnoea	37	18.3	12	50
Stridor	19	9.4	1	4.2
Cyanosis	4	2	0	0
Air entry equal	17	8.4	2	8.3
Air entry decreased one side	157	77.7	21	87.5
Rhonchi or crepts unilateral	43	21.3	2	8.3
Rhonchi or crepts bilateral	13	6.4	9	37.5
Bronchial breathing	1	0.5	0	0
Audible click	1	0.5	0	0
Haemoptysis	1	0.5	0	0

RADIOLOGY: X-Rays in both retrospective and prospective study showed about 35% of patients having obstructive emphysema. Partial or complete collapse of lung was seen in 21.29% in retrospective study and 8.33% in prospective study. Pneumonitic changes were seen in 16% in retrospective study and 25% in prospective study. X-Ray chest was normal in 21 cases (10%) in retrospective study and in 8 cases (33%) in prospective study. In only one case radio opaque foreign body i.e. hairpin was seen.

	Retrospective		Prospective	
x-ray finding	**No. of cases**	**% age**	**No. of cases**	**% age**
Collapse	43	21.2	2	8.3
Obstructive emphysema	70	35	8	33
Pneumonitis	33	16	6	25
Surgical emphysema	16	8	0	0
Normal	21	10	8	33
Foreign body seen	1	0	0	0
X-ray not taken	18	9	0	0

DISCUSSION: Since the history of foreign body aspiration is not always reliable and the child may present with no fixed pathognomonic symptoms and signs many foreign body cases may be missed. These cases may mimic any of the variegated respiratory diseases of the childhood like asthma, bronchitis, bronchopneumonia, empyema, tuberculosis, laryngotracheobronchitis, acute epiglottitis etc. added to this apathy and skepticism of general practitioner and practitioner as to the foreign bodies in bronchus make foreign body lower airway one of the most under diagnosed conditions.

Hence an attempt is made to propose a scoring system where in various factors like history, symptoms, signs, and X-ray findings are given scores as shown in the table:

1	History	2	Clear +ve H/O FBA	Doubtful \ Retrospective	No H/O FBA	
			2	1	0	
2	Symptoms	2	Acute onset of cough or breathlessness	Rec. LRI.	No symptoms	
			1	1	0	
3	Signs	4	Decreased air entry on one side	Stridor	Adventitious sounds	No signs
			2	1	1	0
4	X-rays	2	Obstructive emphysema	Collapse	Pneumonitis	No findings
			2	1	1	0
	Total	10				

In the present study scoring was done and data analyzed.

Suspicion score	**Retrospective cases**	**Prospective cases**
1	0	
2	5	
3	8	3
4	31	4
5	76	5
6	62	8
7	20	4
8		
9		
10		
Total	202	24

DISADVANTAGE: This scoring system cannot be successfully applied to tracheal foreign bodies as in foreign body trachea, the clinical features like reduced air entry and x-ray finding are insignificantly present. Hence an exception that even in presence of foreign body trachea the score is low.

This scoring system statistically is still un commentable, as we have included only those cases where foreign body have been removed on bronchoscopy and excluded all those cases where no foreign body was seen on bronchoscopy.

CONCLUSION: 79% of cases where foreign body was found had a score above 5. So we can take a score of 5 and above to be a strong reason to do a bronchoscopy. However as much as 21% of positive cases had a score of less than 5, we cannot rule out a possibility of a foreign body even if the score is less than 5. 10% of patients had a score of less than 3. Since a diagnostic bronchoscopy is not a dangerous procedure we advocate bronchoscopy even if the score is 3 where as if the score is 5 and above bronchoscopy is mandatory.

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