Original Article

Prevalence, Management and Complications of Foreign Body Bronchus in Sudanese Children.

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Abstract

Background: Inhalation of foreign bodies (FBs) is a common problem in Sudanese children. Its incidence has not changed significantly but the safety of removal has improved dramatically. Most of the airway FBs was in patients younger than 15 years of age.

Methodology: This is a retrospective study conducted in Ibn Sina and Al Doha ENT hospitals from Jan 2008 to Dec 2010 using rigid bronchoscopy in Sudanese children who had foreign bodies (FBs) in the bronchus.

Result: A total of 150 bronchoscopies was performed : 89 cases (56%) were below 2 years of age;45 cases(30%) were between 2-5 years ;and 18 cases (14%) were over 5 years of age .

In 88 cases (58.7%) the foreign bodies inhalations (F.Bs) were peanuts and in 27 cases (18%) were watermelon seeds, and most of the FBs were found in children under 5 years of age. Pins and needles were found in 8cases (5.3%) mostly teenage females. Most of the FBs (82.7%) were radiolucent showing minimal or no X-ray findings. Most of the bronchoscopy (80%) was done as an elective. All FBs could be found by bronchoscopy and 90% of FBs were located in the right main bronchus. Ninety percent of the FBs were successfully removed. In 5% of patients they were removed partially. In only 5% of the patients, the procedure failed. The majority of FBs which were not removed were pins and needles. Urgent tracheostomy was done for three cases (2%) to remove a large FB through the stoma. Several complications were reported either due to the inhaled FBs or due to bronchoscopic procedure. In one patient (0.7%) perforation of bronchus occurred and chest tube with under water seal was inserted. Only one cases (0.7%) had operative mortality. In two cases (1.3%) the mortality was due to inhaled FBs. Overall mortality was 2%.

Conclusion: Certain food items especially peanuts if given to children have to be given with caution and under close supervision. In a child who develops sudden wheezes where asthma has not been previously diagnosed and no persistent chest infection was suspected, bronchoscopy should always be considered. Bronchoscopy should be performed as an elective procedure for its favorable outcome. Intraoperative tracheostomy sometimes is mandatory to remove hard and sizable FBs

Keywords: Foreign bodies inhalation (FBs), Bronchoscopy, Rigid bronchoscopy.

Inhalation of foreign bodies (FBs) is a common problem in Sudanese children. Its incidence has not changed significantly but the safety of removal has improved dramatically[1, 2].

Most of the airway FBs was in patients younger than 15 years of age. The highest incidence occurs between one and three years of age[3]. El mustafa reported that out of 426 bronchoscopies, 68% were under two years of age, 20% were between two to five years, 12% were over five years of age[2].

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Yagi reported that in Sudanese patients, most common FBs in the bronchi are peanuts (Arachis hypogea), and roasted water melon seeds (citrillus vulgaris) [1].

There are three clinical phases with children presenting with FBs inhalation, which consist of chocking, gagging and paroxysms of coughing or airway obstruction[3,4].

Plain X-rays of the chest were not helpful in the diagnosis, except in few cases (9.5%) where the FBs were radio-opaque[5, 6].

FBs bronchus are usually removed successfully by rigid bronchoscopy[1,2,5, 6].

Yagi reported that extraction of FBs was successfully performed in Sudanese children by rigid bronchoscopy[1,2].

Bronchoscopy need not be done as an emergency if the child is not in acute respiratory distress because it is much safer to perform bronchoscopy under safe condition with proper instruments and experienced hands[6].

Common complications due to FBs inhalation are; obstructive emphysema, mediastinal shift, atelectasis, respiratory distress, and death due to asphyaxia. Common complications that may occur after FBs removal are pneumonia and atelectasis[1,2,7]. Some complications are due either to procedure or to anaethesia such as; failure to remove, postoperative stridor, perforation of the bronchus, tension pneuomothorax, surgical emphysema, delayed recovery and postoperative death[3,4]. Most complications are the results of delayed diagnosis. Earlier diagnosis correlates with fewer complications[3,4].

Patients and methods

Study design: This is a retrospective study conducted during the period from January 2009 to December 2010 in Aldoha ENT and Ibn Sina hospitals, Khartoum, Sudan.

Study area: IbnSina hospital. This hospital is the national referral hospital for the country. The capacity of the ENT unit is 30 beds in six wards. There are six consultants and 10 registrars.

Al Doha ENT Hospital. This is a charity hospital, located in Khartoum city and staffed by 21 consultants and five registrars. The hospital provides emergency cover and very busy referred clinics.

Inclusion criteria: All children who presented with FBs in bronchus.

Exclusion criteria:

Chronic cough, SOB and chocking due to any of the followings: Acute upper respiratory tract infections, Asthma, respiratory papillomatosis, chronic chest infection and any child submitted before for diagnostic bronchoscopy.

Data collection and management**:** The data were collected using a carefully designed questionnaire. The children were examined thoroughly and bronchoscopy performed under general anaesthesia. The patients were seen postoperatively and assessed clinically.

Data analysis: The data were analyzed by a static specialist who used computer, soft word and Excel windows 2000 using SPSS program.

Results

A total of one hundred and fifty patients with FBs bronchus were included in this study (n=150). Patients were randomly selected from Aldoha ENT hospital and IbnSina hospital.

The commonest age group affected was less than two years of age [87patents (56%)] followed by age group 2-5years [30% (45)]. Male gender predominates 57.0%.

Concerning the type of FBs inhalation; peanut is the commonest 58.7% then Watermelon seeds 18% (Table 1).

Table1: Common types of FB

Type of FB	Frequency	%
Peanuts	88	58.7
Watermelon seed	27	18.0
Metallic material	9	6.0
Plastic material	6	4.0
Pins and needle	8	5.3
Others	12	8.0
Total	150	100

Patients presented with many symptoms but all patients 150 (100%) had cough (table 2).

Table2:- Clinical symptoms (n=150)

Main complain	No	%
Cough	150	100
Roaring chest (Wheezes)	139	92.7
Dysponea	69	46.0
Fever	30	20.0
Stridor	20	13.3
Refusal of feeding	17	11.3
Vomiting	14	9.3

Wheezes and crepitations were the commonest signs, they accounted for 92.7%. Other clinical signs were shown in Table 3.

Table 3:-Findings on clinical examination (N=150).

On examination	No	%
Wheezes	139	92.7
Crepitation	131	87.3
Dysponea	69	46.0
Signs of Resp.obstruction	49	32.7
RR (>30/min)	31	20.0
Dull areas	15	10.0
Consolidations	14	9.3
Pallor	9	6.0
Deviation of the trachea	6	4.0

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CXR was done to all patents with two views (PA and lateral). FBs were radiolucent in 124 (82.7%) patents.

FBs were seen at bronchoscopy and they were removed successfully in 134 patents (90%), but in equal number of patents 8(5%) FBs were partially removed (peanuts) or failed to be removed.

Regarding the complications of FBs inhalation and bronchoscopy, delay in recovery from anaethesia was the commonest one 24 (16%) cases which was usually associated with prolonged procedure. The least frequent complication was perforation of the bronchus with consequent tension pneuomothorax which necessitated chest tube insertion. This happened to one patent (0.7%). Death occurred in three patients (2%) (Table4).

Discussion

FB bronchus is a common problem in children below five years and in children with low socioeconomic status. In this study it was found that children less than two years are the most (56%) affected group and this agrees with others[1,2,4, 8].

It is clear that the commonest (58.7%) type of FBs were peanuts followed by watermelon seeds (18%) this agrees with the published literatures[1,2].

Cough is the commonest (92.7%) presenting symptom followed by dyspnoea (46%) and this is in agreement with some other authors[1,2].

Table no (4): Complications of FB inhalation and operative procedure (n=150)

Complications	No	%
Delayed recovery	24	16.0
Failure of removal	8	5.3
Postoperative stridor	4	2.7
Urgent tracheostomy	3	2.0
Death	3	2.0
Surgical emphysema	2	1.3
Perforation of the bronchus	1	0.7
TP and chest tube	1	0.7

TP= Tension pnuemothorax

In this study wheezes and crepitations were the commonest signs (92.7% and 87.5% respectively). Some patients were dysponic and others had signs of respiratory obstruction.

CXR (PA and lateral) findings were not significant in 82.7% .This is in agreement with Yagi who found that CXR and X –ray neck were normal or poorly informative in most of his series[1].

Elmustafa[2] reported that 90% of FBs were radiolucent in Sudanese children.

Regarding the management of these patients, elective bronchoscopy was done to the majority (80%) of the patients. In this study all deaths and complications occurred in urgent bronchoscopies. This is consistent with reported literature that elective bronchoscopy is preferable, because it is much safer to perform under safe conditions with proper instruments and experienced hands[6].

Urgent tracheostomy was done for three (2%) patents. One (0.7%) of them inhaled plastic object and the other two (1.3%) inhaled hard object. Tracheostomy was done during the procedure so as to remove these hard and large objects through the stoma. This was similar to what was reported by Bloom[7].

Death occurred in three patients (2%).One (0.7%) of them was due to bronchoscopy this in agreement with Elmustafa. However, this mortality rate is less than that reported in literature[2,3].

Conclusions

Certain food items especially peanuts if given to children have to be given with caution and under close supervision. In a child who develops sudden wheezes where asthma has not been previously diagnosed and no persistent chest infection was suspected, bronchoscopy should always be considered. Bronchoscopy should be performed as an elective procedure for its favorable outcome. Intraoperative tracheostomy sometimes is mandatory to remove hard and sizable FBs.

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