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Original Research Article

Clinical profile of tracheo-bronchial foreign body inhalation at tertiary care center

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ABSTRACT

Background: Inhalation of foreign bodies can be life threatening and are common in paediatric age group with peak incidence in the age group of 1-3 years. The objectives were to study the clinical profile of foreign body (FB) inhalation and to study the complications of tracheo-bronchial foreign body and rigid bronchoscopy.
Methods: A cross-sectional hospital based diagnostic study conducted for 1 year, done on 50 patients with FB inhalation, included consecutively in study after obtaining informed consent. Patients were assessed and interviewed for socio demographic details and examined using chest X-ray PA view, routine investigations and pre-anaesthetic evaluation. After all investigations a diagnostic bronchoscopy under general anaesthesia was performed to extract the foreign body. Data were analyzed through tables and diagrams and appropriate test of significance by Epi Info software.
Results: Total 50 FB inhalation cases (up to 10 years) in which 40% presented within 5 days to 2 weeks after inhalation. 92% were presents with cough and on chest examination 88% found to had decreased air entry, 72% presents with decreased movement and dull percussion on affected side. 70% of patients had abnormal chest X-ray finding. Foreign body found were groundnut (44%) followed by supari (32%) mostly in right main bronchus. We observed 10% patients with pneumonia, 4% had granuloma and 2% had bronchospasm.
Conclusions: Prevention is best, but early recognition remains a critical factor in the treatment of FB inhalation in children.

Keywords: Foreign bodies, Tracheo-bronchial, Rigid bronchoscopy

INTRODUCTION

Any object large or small that finds its way into the body either through a wound in the skin or via one of the body orifices such as the nose, eye, ear, vagina or rectum is called as a "foreign body".[1] Children aged 1-3 years are particularly at risk for foreign body (FB) aspiration because of their increasing independence, lessening of close parental supervision as they become older, increasing activity, curiosity because of hand - mouth interactions.[2] FB is common serious problem among children accounting for 7% of the lethal accidents in children aged between 1 to 5 years.[3] According to National safety council statistics, mechanical suffocation accounted for 5% (167) of all unintentional deaths among children in the United States younger than 4 years of age. Boys comprise more than 50% of all cases of FB aspiration.[4] The treatment of choice is prompt diagnosis and endoscopic removal. The radiological diagnosis of FB inhalation is challenging for several reasons. The findings of chest radiography are normal in up to 30% of children who inhaled a FB and the presence of pulmonary

infiltrates may misdirect the management of FB inhalation.[5] Only 10% of FB is radio-opaque. Bronchoscopy is often performed for definitive diagnosis and management; however, it is invasive and procedure related serious complications may occur.

Objective

The objectives of the study were to study the clinical profile of FB inhalation and to study the complications of tracheo-bronchial FB and rigid bronchoscopy.

METHODS

This cross-sectional hospital based diagnostic study was conducted in department of Otorhinolaryngology and Head and Neck surgery, S. P. Medical College and PBM hospital, Bikaner between January 2019-December 2019 including 50 consecutive patients with FB inhalation on the basis of clinical history and long-standing chest infections. Patients with definitive history and patients with severe respiratory distress which warrants emergency bronchoscopy without prior investigations and not willing were excluded from study. Patients were assessed and interviewed for socio demographic details and detailed history was taken. General physical examination was done. Chest examination was done to assess the air entry, movements and sound. The chest X-ray PA view was done in all participants to know the site of FB in some cases where FB was not seen on chest X-ray NCCT thorax was also done. Routine investigations and pre-anaesthetic evaluation were done before a diagnostic bronchoscopy under General anaesthesia was performed to extract the FB.

Data were analyzed through tables and diagrams and appropriate test of significance by Epi Info software.

RESULTS

The present study was conducted in department of Otorhinolaryngology and Head and Neck surgery, S. P. medical College and PBM hospital, Bikaner from January 2019-December 2019.

Maximum 42% were in 1-3 year age group, 62% were male, 70% residing in rural area and 58% had lower socioeconomic status.

40% of cases were presented to OPD in 5 days to 2 weeks duration whereas only 10% were in <24 hrs. 92% presented with cough, 78% with difficulty in breathing and only 1% had change in voice.

On GPE 88% had increased respiratory rate, 8% had cyanosis and 36% had Palpable thud in trachea. On chest examination 88% found to had decreased air entry, 72% presents with decreased movement and dull percussion on affected side, wheeze in 26% whereas ronchi and crepts in 12% each.

Table 1: Socio demographic profile.

Socio-demographic	Frequency	%
Age (years)		
<1	7	14.00
1-3	21	42.00
3-5	11	22.00
5-7	7	14.00
7-10	4	8.00
Sex		
Male	31	62.00
Female	19	38.00
Residence		
Urban	15	30.00
Rural	35	70.00
socio economic status		
Lower socio economic	29	58.00
Middle socio economic	20	40.00
Upper socio economic	1	2.00

Table2. Presenting complaints and duration

Variables	Frequency	%
Duration		
<24 hrs	5	10.00
1-5 days	10	20.00
5 days to 2 weeks	20	40.00
>2 weeks	15	30.00
Presenting complaints		
Cough	46	92.00
Difficulty in breathing	39	78.00
Fever	10	20.00
Wheeze	11	11.00
Vomiting	2	4.00
Change in voice	1	2.00

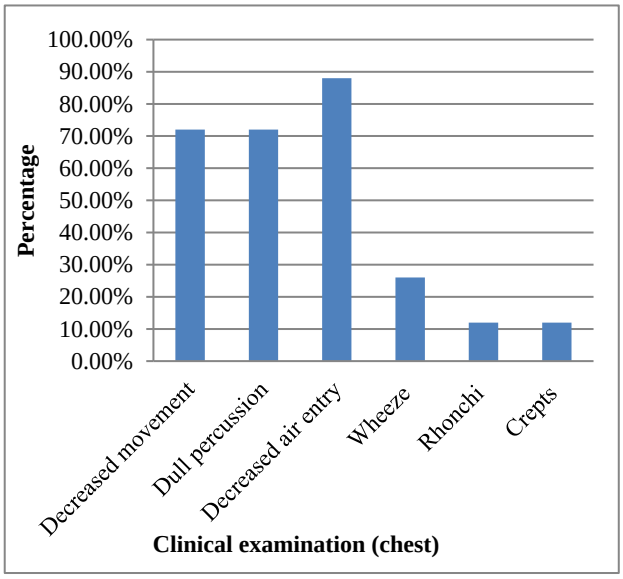

Figure 1: Distribution of study population according to their clinical examination.

On chest X-ray 32% had emphysema followed by 28% collapse of lung whereas 30% had normal chest X-ray. On bronchoscopy FB found in rt. main bronchus (60%) followed by 22% in lt. main bronchus.

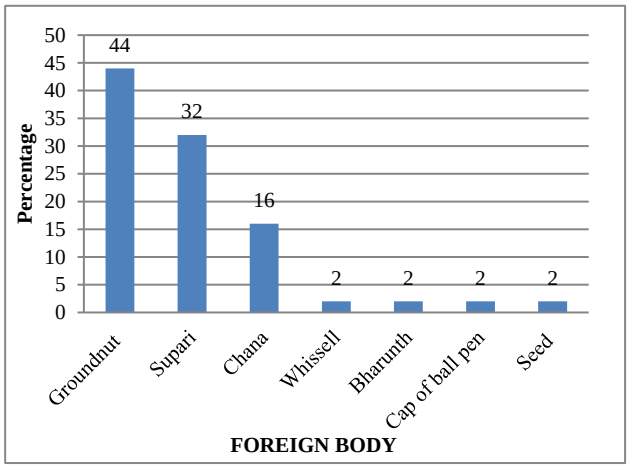

Figure 2: Distribution of study population according to type of FB.

Maximum 44% were groundnut followed by supari 32% whereas minimum 2% were seed, bhwrunth, whissell and cap of ball pen followed by chana (16%).

Table 3: Complications.

Complication	Frequency	%
Granuloma	1	2
Bronchospasm	1	2
Pneumonia	2	4

We observed 10% patients with pneumonia, 4% had granuloma and 2% had bronchospasm.

DISCUSSION

The present prospective hospital based diagnostic study was conducted in department of Otorhinolaryngology and Head and Neck surgery, S. P. medical College and PBM hospital, Bikaner between January 2019-December 2019 including 50 consecutive patients with FB inhalation on the basis of clinical history and long-standing chest infections and fulfill inclusion and exclusion criteria were included.

In our study mainly pediatric age group was included in which 42% were in 1-3 years age group followed by 3-5 year (22%) whereas minimum 8% were in 7-10 years group followed by <1 year and 5-7 years age group (14%). Also Meena et al in their study found out of 60 patients the incidence of FB inhalation was found more between age group of 1-3 years (41.66%).[6]

Higher proportion were found by Wolach et al studied 127 children and found 81% of the children were less than 3 years of age and Suligavi et al noted that most commonly affected were children of 1 year to 3 years of age.[7,8]

Whereas Mukherjee et al found among 94 patients 70.2% i.e. 66 were within 5 years of age and most were within 2-3 years of age and Nagaraj et al found 88% of the patients were children below the age of 12 years.[9,10] This was seen because most common age group of FB aspiration was found to be <10 years.

In our study majority 62% were male and 38% were female also Meena et al observed male preponderance whereas Nagaraj et al found 58 were males and 42 were females.[6,10]

70% of study population was residing in rural area whereas 30% residing in urban area. Maximum 58% had lower socioeconomic followed by 40% middle and only 2% had upper socioeconomic status. Our study was hospital based study, which was a tertiary care so most of the cases were referred from rural areas and mostly were lower socio economic status patients.

All most all (92%) presents with cough, 78% with difficulty in breathing, 20% had fever, 11% develops wheeze, 4% had vomiting and only 1% had change in voice. Also Meena et al found cough (83.33%) as most common symptom and Suligavi et al found chronic cough and wheeze as the commonest presenting symptoms.[6,8]

In our study 40% had symptoms from 5 days to 2 weeks duration followed by >2 weeks (30%) whereas minimum 10% were in <24 hrs followed by 20% in 1 to 5 days. Because we had taken suspected cases the patients were treated at lower level first then refer to tertiary center so longer duration patients were more.

On GPE 88% had increased respiratory rate, 8% had cyanosis and 36% had palpable thud in trachea. On chest examination 88% found to had decreased air entry. Also, Meena et al and Nagaraj et al commonest sign observed was decreased air entry in the lung (83%).[6,10] 72% presents with decreased movement and dull percussion on affected side, wheeze in 26% whereas Ronchi and Crept in 12% each.

32% had emphysema followed by 28% collapse of lung whereas minimum 10% had consolidation whereas Nagaraj et al found that commonest radiological finding was obstructive collapse (37%).[10] In our study 30% of patients had normal chest X-ray finding whereas Wolach et al studied 127 children and found lesser (18%) chest X-rays were normal.[7] Higher proportion were found by Bai et al 52.4% had no abnormalities on plain X-ray and Meena et al In 95% X-rays was not confirmative.[6,11]

In opur study FB found maximum 60% in Rt. Main bronchus followed by 22% in left main bronchus whereas minimum 18% in trachea. Similarly, Mukherjee et al and

Gawad et al found.[9,12] The most common site of lodgement was the right bronchus followed by the left bronchus, the trachea and other sites. Also, Nagaraj et al found 48% of the total foreign bodies were present in right bronchus while 32% were lodged in the left bronchus and 3% at the carina.[10] Whereas Kosucu et al found that the FB was in the left main bronchus in eight patients, in the right main bronchus in six patients and in the bronchus intermedius in one patient.[13]

In present study 44% were groundnut followed by supari 32% whereas minimum 2% were seed, bharunth, whissell and cap of ball pen followed by chana (16%). Similarly, Mukherjee et al and Suligavi et al found vegetables were the most common FBs and whistles from small plastic toys were the single most common non organic FB whereas Nagaraj et al the most common FB extracted was betel nut in 47% of the cases.[8-10]

We observed 10% patients with pneumonia, 4% had granuloma and 2% had bronchospasm. Also, Wolach et al found pneumonia (the commonest complication) developed before and after bronchoscopy in 28% of the children.[9]

CONCLUSION

Prevention is best, but early recognition remains a critical factor in the treatment of FB inhalation in children. Whenever children come with cough and difficulty in breathing with decreased air entry should be asessed for tracheo-bronchial FB and should be sent to experienced centres for evaluation and treatment.

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