Original Article

Kochia Indica Wight - An unusual foreign body of the upper airways in children

Khurshid Anwar[1], Rafiq Ahmad[2], Fazli Maula[3], Mohammad Said[4]

ABSTRACT

Objective: To highlight the special features of an unusual foreign body of the larynx, the seed of kochia indica wight, and discuss its management.

Methodology: This prospective study was conducted at the Department of ENT, Khalifa Gul Nawaz Teaching Hospital Bannu, District Headquarter Teaching Hospital, Bannu and this department related consultants' private clinics from January 1, 2009 to December 31, 2011. The study included 32 cases. All the patients underwent direct laryngoscopy for removal of foreign body. The main indication for direct laryngoscopy was a definite history of foreign body inhalation and acute onset of hoarseness in predisposed children. The results were analyzed using SPSS 16.0 for windows.

Results: A total of 32 cases were included in the study. The age range was 5-15 years. There were 14 males and 18 females. All the patients presented with hoarseness of voice and dry irritating cough. Odynophagia was seen in 56.2% cases whereas breathing difficulty was present only in 9.4% of cases. The foreign body was lodged lateral to anterior 1/3rd of the cord in 62.5% followed by lateral to mid cord in 31.2% cases.

Conclusion: Kochia indica wight seed is an unusual but a common foreign body of the larynx in the southern districts of Karak & Bannu. The diagnosis is easy in the predisposed children. Though it does not change its position in the larynx, yet urgent removal should be undertaken as foreign body in the larynx is potentially a life threatening condition.

KEY WORDS: Foreign body, Larynx, Direct laryngoscopy.

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1. Khurshid Anwar,
Senior Registrar,
2. Rafiq Ahmad,
Assistant Professor,
3. Fazli Maula,
Assistant Professor, Department of Pulmonology,
4. Mohammad Said,
Associate Professor,
1,2,4: Department of ENT, Head & Neck Surgery,
1-4: Khalifa Gul Nawaz Teaching Hospital/
Bannu Medical College (KGNTH/BMC),
Bannu, Pakistan.

Correspondence:

Dr. Khurshid Anwar,
Senior Registrar, ENT Department,
Khalifa Gul Nawaz Teaching Hospital/Bannu Medical College,
Bannu, Pakistan.
E-mail: dr.khurshidanwar@yahoo.com

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INTRODUCTION

Kochia Indica Wight (Colloq: Qurashka) is found widely in areas of Karak and Bannu districts of Khyber Pakhtunkhwa. The seeds are very light, small and surrounded by sharp and stiff spicules throughout the whole circumference. In summer, the detached seeds are blown by strong winds to far off places. These find entry into the houses by entangling to the clothing, in the fodder and by attaching to the bodies of animals especially the sheep. The dried plant is also used as fuel in the households. Inhalation into the airway is accidental and mostly affects young shepherds. Children at home are usually affected by the seeds which find their way into the households. The spicules get attached to the clothing and cause pricking of the skin which causes severe discomfort. Whereas

adults usually find no problem with their removal, the children attempt to remove them with their teeth to avoid finger pricking. Removal becomes easier once the sharp bristles get wet. Coughing and deep inspiration during this period may predispose to inhalation.

The protective mechanisms of the larynx and cough reflex prevent the entry of foreign bodies into the trachea. When a foreign body reaches the laryngeal inlet it triggers a cough reflex just by touching the laryngeal mucosa. Enormous air pressure is built up against the vocal cord and released suddenly to force the foreign body out of the larynx.[1]

The majority of aspirated foreign bodies caught in the airways of children are spontaneously eliminated by coughing.[2] It is not exactly known as to why the foreign body gets lodged preferentially in the supraglottic region. Presumably the sharp spicules penetrate the supraglottic mucosa to give it a sufficiently firm attachment once its entry into the trachea is prevented by the cough reflex. The initial response to aspiration is choking, coughing and hoarseness. As the size of the seed is small, the classical signs and symptoms of laryngeal foreign body inhalation are usually absent. Dyspnoea and odynophagia may also be present as is the case with other sharp laryngeal foreign bodies.[3]

Laryngeal foreign bodies constitute one of the most serious emergencies with death as an imminent possibility. In the absence of complete airway obstruction, laryngospasm caused by embedded small sharp laryngeal foreign bodies may prove fatal. Prompt removal is therefore, required.[4,5]

This study aims to share our experience with an unusual foreign body that is not uncommon in our local settings and highlight its unique features. The accident is preventable. Classical signs and symptoms of foreign body inhalation into the airway are usually absent and diagnosis may easily be made if this possibility is kept in mind in patients from this particular area.

METHODOLOGY

This prospective study was conducted at the Department of ENT and Head & Neck Surgery, Khalifa Gul Nawaz Teaching Hospital, District Headquarter Teaching Hospital, Bannu/ Bannu Medical College, Bannu and this department related consultants' private clinics from January 1, 2009 to December 31, 2011.The study included 32 cases presenting with Kochia indica wight seed as foreign body in the upper airway. It was a prospective and descriptive study using the non-probability convenience sampling technique.

Inclusion Criteria: Patients of all ages and both sexes with a definite history of kochia indica wight inhalation.

Sudden onset of hoarseness in otherwise fit and predisposed children.

Exclusion Criteria: Foreign bodies of the upper airway other than kochia indica wight.

Patients with acute onset of hoarseness and no definite history of kochia indica wight inhalation where the foreign body was not visualized on fibro-optic direct laryngoscopy.

Data Collection Procedure: The indication for direct laryngoscopy in the selected cases was a definite history of foreign body inhalation and acute onset of hoarseness. Informed consent was obtained in every case. A detailed history was taken with special emphasis on exposure to this particular foreign body, the mode of onset, duration & progression of hoarseness, breathing difficulty and others associated symptoms. ENT and systemic examination were carried out in every case. Indirect laryngoscopic examination was attempted in all cases. Fibro-optic direct laryngoscopy was carried out in cases where mirror examination was deemed insufficient. Mirror examination was considered as insufficient where larynx was not visualized especially in the anterior part, in uncooperative patients, hyperactive gag reflex in the cooperative patients and hoarse patients with a definite history of exposure to this particular foreign body in whom the foreign body could not be visualized on indirect laryngoscopic examination. Uncooperative children with a definite history of kochia indica wight seed inhalation and presenting with acute onset of hoarseness underwent direct laryngoscopic examination in the first place. Systemic examination was mainly focused on excluding other causes of hoarseness and respiratory distress of sudden onset. Cyanosis and other signs of respiratory distress were looked for and the chest was examined in detail. Chest radiographs were obtained in all cases and the opinion of pulmonologist sought in patients with persistent cough and wheezing to assess the patient for any concomitant lower respiratory tract pathology. Baseline investigations were ordered to assess the patients' general condition and fitness for the general anaesthesia. The following laboratory investigations were carried out, as and when necessary;

Complete blood picture, screening for hepatitis B and C, urine R/E, ECG, and echocardiography. General anaesthesia using intravenous Propofol

Table-I: The age and duration of presentation.

	Age of the patient	*Duration in hours*
N	32	32
Mean	10.62	20.91
Std. Deviation	2.324	19.057
Minimum	5	2
Maximum	15	72

without the use of muscle relaxants and endotracheal intubation was used to carry out direct laryngoscopy. Microforceps were employed during the procedure to retrieve the foreign body. The larynx was examined to look for remnants of the foreign body and other possible injuries caused by it / or the procedure. The removed foreign body was examined for breaks in the continuity and missing specula's.

All the data regarding age, gender, site of attachment in the air ways was recorded on a proforma designed for the purpose. The data was analyzed using SPSS 16.0 for windows. Descriptive statistics like mean $\pm$ standard deviation were calculated for quantitative variables like age and duration of symptoms. Frequency and percentages were calculated for categorical variables like gender and site of attachment in the larynx. All these results were presented in the form of tables.

RESULTS

A total of 32 cases were included in the study. The age range was 5-15 years. The mean age was 10.62 years with a std. deviation of $\pm$ 2.324 years (Table-I). The male to female ratio was calculated as 1:1.3. In all there were 14 males and 18 females. Hoarseness and dry irritating cough was present in all the patients. Odynophagia was seen in 56.2% cases whereas breathing difficulty was present only in 9.4% of cases (Table-II). Odynophagia was also a statistically significant symptom ($p< 0.05$). The foreign body was lodged in lateral to anterior 1/3rd of the cord position in 62.5% cases followed by lateral to mid cord position in 31.2% cases (Table-III). The side of lodgment in the larynx was statistically non significant as either side was involved almost equally.

Table-II: Symptoms on presentation.

		No of Patients	*Percentage*
Hoarseness of voice	absent	0	0.0%
	present	32	100.0%
Dry irritating cough	absent	0	0.0%
	present	32	100.0%
Odynophagia	absent	14	43.8%
	present	18	56.2%
Pain in neck	absent	19	59.4%
	present	13	40.6%
Difficulty in breathing	absent	29	90.6%
	present	3	9.4%
Fever	absent	24	75.0%
	present	8	25.0%

DISCUSSION

Foreign body aspiration is one of the leading causes of accidental death in children. According to a study of US national safety council, foreign body inhalation carries a mortality rate of 1.2 per 100,000 people per year.[3] Food items are the most common items aspirated in infants and toddlers, whereas older children are more likely to aspirate non-food items. Laryngeal impaction of a foreign body is rare and accounts for 2-11% of respiratory tract foreign bodies.[6,7] Most aspirated foreign bodies pass through the laryngeal inlet and get lodged lower down in the airway. Mohammad Asif and colleagues in a study conducted in Abbott Abad found 1.2% rate of impaction of foreign body in the larynx.[8]

Sharp foreign bodies do not necessarily lodge in the larynx. In a study conducted at Abbasi Shaheed Hospital, Karachi, Mossani and co workers reported a sharp bony chip making its way to the trachea in a young male child.[9] A foreign body in the larynx is generally considered as a serious emergency necessitating urgent intervention. Clinical diagnosis is relatively easier when signs and symptoms of respiratory distress are present. However unusual presentation is not rare where the classical signs and symptoms of foreign body inhalation are absent. Yadair published a case of laryngeal foreign body in which the diagnosis was delayed for four months. Once the possibility of larynx FB is raised, thorough examination of the larynx is required.[10] Most publications in the literature refer to FB removal under general anesthesia as the management of preference, using suspension laryngoscopy or bronchoscopy, as the foreign body may move

Table-III: Site of foreign body lodgment in the larynx.

	Frequency	*Percent*	*Valid Percent*	*Cumulative Percent*
Anterior commissure	2	6.2	6.2	6.2
Lateral to ant 1/3rd	20	62.5	62.5	68.8
Lateral to mid cord level	10	31.2	31.2	100.0
Total	32	100.0	100.0	

down leading to asphyxia.[11] The chosen approach in this study was removal under general anesthesia through direct laryngoscopy.

A number of airway foreign bodies are reported in the literature with varied symptomatology Wheeze is the major clinical sign of asthma. However, wheeze cannot be used as a unique diagnostic sign for asthma in young children. Most respiratory diseases in early childhood are obstructive in nature and usually manifests with wheeze. The importance of a carefully taken history and examination of every child presenting with wheeze in early childhood is, therefore, very important.[12] Cinar and colleagues reported a 10 year old girl having Down's syndrome with asthmatic symptoms and no history of foreign body inhalation. The child was receiving treatment for bronchial asthma but to no avail. A month later she was found to have a thin and sharp bony foreign body entangled in the larynx.[13] Bakshi J and colleagues reported two unusual cases of laryngeal foreign body who did not present with the classical features of foreign body in the larynx. In one of their cases a vegetable foreign body was found wrapped in fibrotic mass over a span of one year.[14]

None of our patients had the classical presentation of inhaled laryngeal foreign body. The presentation was early as compared to other reports of unusual laryngeal foreign bodies in the literature perhaps because the people here are aware of such a possibility. Moreover sudden onset of hoarseness, cough combined with a definite history of inhalation of this particular foreign body helped to establish an early diagnosis. It was not found in children below five years of age and relatively older children were affected. The possible reason could be the sharp prick it causes when it comes in contact with the fingers making it less likely by inquisitive young children to take it into their mouths.

In a study in Jaipur in 2010, Rajeev and Pawan recommended a cautious approach for laryngeal foreign bodies that are rare and reported infrequently. They are of the opinion that foreign bodies that do not obstruct the airway but are stucked in place are potentially life threatening.[15]

CONCLUSION

Kochia indica wight seed is an unusual but a common foreign body affecting older children in our local setting. Its accidental inhalation may be prevented by properly educating the local populace. Sudden onset of hoarseness, bouts of dry irritating cough and a history of contact with particular foreign body makes the diagnosis relatively easier in predisposed children. Though the seed remains entangled in the larynx without changing its position, yet urgent removal should be undertaken as foreign body in the larynx is potentially a life threatening condition.

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Authors Contribution:

KA & RA**:** Designed the study, were also involved in management of these patients, data collection, literature search, interpretation of results, analysis of data and preparing the final manuscript.
FM: Acquisition, analysis and interpretation of data and literature search.
MS:. Management of patients,Acquisition, analysis and interpretation of data, literature search, drafting of the final manuscript.