

LARYNGOTRACHEAL FOREIGN BODIES IN MAIDUGURI: A TEN YEAR REVIEW

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Background: Foreign body impaction in the laryngotracheal tree, a major cause of upper airway obstruction in children, is an otorhinolaryngological emergency. Direct laryngoscopy, tracheoscopy or bronchoscopy is usually employed to remove foreign body in the upper airway. However, tracheostomy may be required to secure the airway before endoscopic removal is carried out in some cases.

Objective: To determine the prevalence of laryngotracheal foreign body in our community and highlight the life threatening consequences when referrals are delayed.

Method: This is a retrospective evaluation of case records of 44 patients who presented with history of foreign body inhalation or features of upper airway obstruction between January 1995 and December 2004 at the University of Maiduguri Teaching Hospital. **Results:** A total of 44 patients were found to have foreign body impaction over the study period. Sixty eight point two percent were males and 31.8% females. Children under 4 years of age were mostly affected constituting 61.4%. The commonest type of foreign body inhaled was bean seed constituting 27.2%. Ninety point nine percent of the patients had endoscopic removal of foreign body and 37.5% had emergency tracheostomy to secure the airways pre-operatively.

Conclusion: Foreign body inhalation could be life threatening hence children below the age of 4 years should not be allowed to play with small toys unattended to, or be allowed to play close to beans or groundnut drying fields as is the case in some farming communities.

Key Words: *Foreign body, Inhalation, Laryngotrachea, laryngoscopy, Endoscopy.*

Introduction

Laryngotracheal foreign bodies, though more life threatening than foreign body in the oesophagus, seem to have received less attention in the medical literature¹. Foreign body inhaled could either be of vegetable or non-vegetable origin. Those of vegetable origin are more associated with complications and are more life-threatening because they evoke strong tissue reactions.

Foreign body inhalation is commonly seen in children and this has been attributed to natural curiosity in children, especially those who are left unattended to, and perhaps of poor socio-economic background. Children in this category are more likely to inhale or swallow available objects such as toys, seeds and fruits².

The appearance of symptoms following foreign body inhalation is usually dramatic in onset and so alarming in nature that the patients or their relatives seek medical help promptly. Direct laryngoscopy, tracheoscopy or bronchoscopy is usually employed to remove foreign bodies from the larynx. However, in some cases, tracheostomy may be used to secure the airway before their endoscopic removal. The first endoscopic removal of foreign body in the larynx was done in 1897 by Killian³.

The objective of this study was to highlight the prevalence of inhaled foreign bodies in our community and to emphasize on the life-threatening consequences of

foreign body inhalation.

Materials and Methods

The records of all 44 patients who had foreign body in the laryngotracheal tree between January 1995 and December 2004 at the University of Maiduguri Teaching Hospital, Maiduguri were retrospectively reviewed.

The data extracted were age, sex, type of foreign body inhaled, radiological findings on radiographs of the soft tissue of the neck and chest, endoscopic findings and tracheostomy notes. Only patients with foreign bodies in the laryngotracheal tree were included in the study, while those with foreign bodies in the oesophagus or pharynx were excluded. The data were analysed using the Statistic Product and Service Solution (SPSS) version 11.0 software programme. The results were presented in tabular and graphic form.

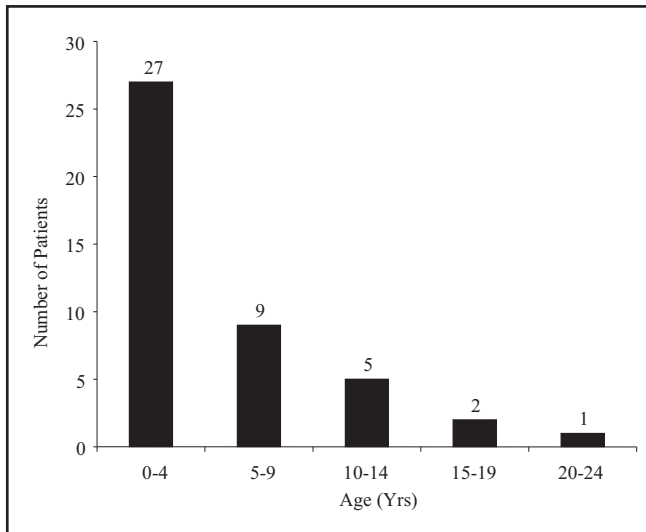
Results

A total of 44 patients were found to have foreign body impaction in the laryngotracheal tree over the 10-year study period. The mean age of the study population was 4.9 ± 4.2 years with 27 (61.4%) being 4 years and below. A decreasing prevalence was observed with advancing age (Fig. 1). Thirty (68.2%) were males and 14 (31.8%) were females showing a significant sex difference ($P < 0.05$).

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Bean seed inhalation was the commonest and occurred in 12 (27.2%) patients. This was closely followed by groundnut seed (15.9%) and fruit seed (13.6%) as shown in Table 1. There was no seasonal or festival-related variation in the type of foreign body inhaled as they were evenly distributed throughout the year. Most of the patients (89%) volunteered the history of foreign body inhalation. Five patients (11%) who did not volunteer the history of inhalation, presented with features of airway obstruction and the foreign body was subsequently discovered at radiography in 3 (6.8%) and at endoscopy in 2 (4.2%). The duration of symptom before referral to the Teaching Hospital ranged from one day to three weeks with an average of 4 days. Thirty patients (68.2%) had foreign body impacted in the larynx and these were removed by direct laryngoscopy, whereas, 10 (22.7%) had the foreign bodies in the tracheobronchial tree and had bronchoscopic removal. Four patients (9.1%) died at presentation before any treatment could be offered. A total of 15 (34.1%) patients had emergency tracheostomy prior to the endoscopic removal of the foreign body. All patients who had tracheostomy and those that died had more than three days history of laryngeal obstructive symptoms at presentation.

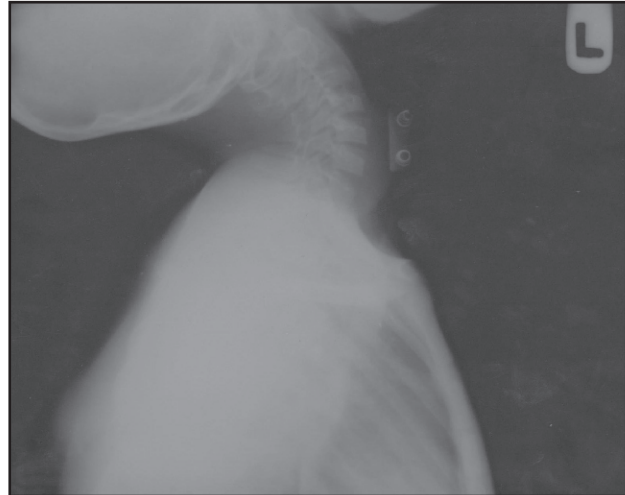
Table 1: Types of foreign bodies inhaled

Foreign bodies	No. of patients*	Percentage
Bean seed	12	27.2
Ground nut seed	7	15.9
Fruit seed	6	13.6
Beads	4	9.1
Fish bone	3	6.8
Rubbery toy	3	6.8
Nail	1	2.3
Piece of metal	1	2.3
Ear ring	1	2.3
Piece of spring	1	2.3
Bicycle spoke	1	2.3
Unknown**	4	9.2

* N = 44, ** Nature of foreign body not determined

Radiograph of a 10-year old boy who had impacted metallic spring in the larynx is shown on the soft tissue radiograph of the neck (Fig.2).

Figure 2: Neck radiograph of a ten-year old boy who inhaled a metallic spring (arrow)



Discussion

Forty four cases of foreign body impaction in the laryngotracheal tree were seen in our hospital within the period of 10 years. Approximately 91 % of the patients had endoscopic removal of the inhaled foreign bodies and 15 (34.1%) had emergency tracheostomy prior to endoscopic removal in order to secure the airways as reported by previous studies^{4,5}. In this study, 39 (88.6%) patients presented with history of foreign body inhalation while 5 (11.3%) presented with stridor, cough and pyrexia and foreign body was discovered at radiography or endoscopy. This is consistent with studies by Kero *et al*⁶. Ninety five percent of the patients presented with more than three days history of foreign body inhalation, the delay being due to economic reasons. For the patients who presented early, their history of foreign body inhalation was ignored and treatment for simple respiratory tract infection or acute laryngotracheobronchitis was given as these diseases may simulate foreign body inhalation. A similar observation was reported by Okafor⁴. Children below 4 years of age were mostly affected and constituted 61.4% of the cases similar to the studies by Okafor⁴ who found children less than 3 years of age to be most affected. Sixty eight percent of the patients were males and 32% females, showing a significant sex difference (P<0.05). This is consistent with the finding by Daniilidis *et al*⁷ but in contrast to the studies by Ibekwe⁸ who found no significant sex difference. Four (9.1%) died at presentation, they were moribund and gave history of foreign body inhalation of prolonged duration. The mean duration of symptoms at presentation in this study was 4.1(+3.8) days and is consistent with the result reported by Ibekwe⁸.

The mortality recorded in this study shows that impaction of foreign body in the laryngotracheal tree, especially the organic type, is life threatening as the patient could ultimately develop acute respiratory obstruction requiring tracheostomy or leading to death. This is consistent with studies by Okafor⁴ and Ibekwe⁸.

Foreign bodies of organic origin consisting of

seeds and fruits were the commonest in our study. This is consistent with the result of study by Daniilidis *et al*⁷ but in contrast with that of Okafor⁴ who found fish bone to be the commonest. Our findings could be attributed to the fact that beans and ground nuts are among the common staple foods found in every household in Maiduguri and its

environment, hence children have easy access to these items in comparison to fish bones. The fact that cases involving fish bones noted in our study were few may suggest that care is taken by parents to remove bones from fish before serving fish meal to children.

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