



Foreign Body Inhalation: A Review of Patients at the Korle Bu Teaching Hospital, Accra, Ghana

Inhalation De Corps Étrangers: Revue des patients au Centre Hospitalier de Korle Bu d'Accra, Ghana

E. D. Kitcher

ABSTRACT

BACKGROUND: Foreign body inhalation, a surgical emergency requiring prompt management to avoid morbidity and mortality, poses a diagnostic and management challenge to otolaryngologists.

OBJECTIVE: To assess the pattern of foreign body inhalation at the ENT Unit Korle Bu Teaching Hospital Accra, Ghana.

METHODS: The theatre records of patients managed for foreign body inhalation from 1st January 2003–31st December 2006 at the ENT Unit of the Korle Bu Teaching Hospital Accra, Ghana were studied with respect to age, sex, clinical presentation, types of foreign bodies removed, location of foreign bodies, and outcomes of the laryngoscopy or bronchoscopy procedures.

RESULTS: There were forty patients with an age range of seven months to 15 years with a mean age of 4.78 years and a peak age incidence at zero–four year age group. The commonest inhaled foreign bodies included groundnuts in five (12.5%) patients, fish bones in six (15%) patients, plastic materials in five (12.5%) patients, metal material in five (12.5%) patients and seeds in five (12.5%) patients. The common clinical presentations included respiratory difficulty, irritating cough, choking, painful swallowing and whistling sound during breathing. Foreign bodies were localized in the right main bronchus in 27 (67.5%) patients, and in the left main bronchus in ten (25%) patients and in the larynx in three (7.5%) patients. One patient died during bronchoscopy and another patient had bronchotomy for failed bronchoscopy.

CONCLUSION: The peak age of occurrence of foreign body inhalation is in the zero-four year age group. The commonest inhaled foreign bodies are groundnuts, fish bones, plastic materials, metal materials and seeds. Majority of inhaled foreign bodies tend to localise in the right main bronchus. *WAJM 2009; 28(6): 368–370.*

Keywords: Foreign bodies, Morbidity, Mortality, Inhalation, Ear, Nose and Throat, Ghana,

RÉSUMÉ

CONTEXTE: L'inhalation de corps étranger, une urgence chirurgicale nécessitant une prise en charge rapide afin d'éviter la morbidité et la mortalité, pose un diagnostic et un défi de gestion pour otolaryngologistes.

OBJECTIF: Évaluer le modèle de l'inhalation de corps étranger à l'ENT Korle Bu Teaching Hospital Unit Accra, Ghana.

Méthodes: Les dossiers théâtre de patients pris en charge pour l'inhalation de corps étranger du 1er Janvier 2003 au 31 Décembre 2006 à l'Unité ORL de l'Korle Bu Teaching Hospital Accra, au Ghana ont été étudiés à l'égard de l'âge, le sexe, la présentation clinique, les types de corps étrangers enlevés, la localisation des corps étrangers, et les résultats des procédures laryngoscopie ou bronchoscopie.

RESULTATS: Il y avait quarante patients dont l'âge varie de sept mois à 15 ans avec une moyenne d'âge de 4,78 ans et une incidence de l'âge de pointe à zéro-quatre ans par an. L'inhalation fréquente de corps étrangers inclus arachides sur cinq (12,5%) patients, les os de poissons dans six (15%) des patients, des matières plastiques sur cinq (12,5%) patients, matériau métallique sur cinq (12,5%) des patients et des graines dans cinq (12,5% de patients). Les présentations cliniques communs inclus difficultés respiratoires, une toux irritante, la suffocation, déglutition douloureuse et sifflement lors de la respiration. Les corps étrangers ont été localisés dans la bronche principale droite dans 27 (67,5%) patients, et dans la bronche souche gauche sur dix (25%) patients et dans le larynx en trois (7,5%) patients. Un patient est décédé au cours de la bronchoscopie et un autre patient avait bronchotomie de la bronchoscopie échoué.

CONCLUSION: Le pic d'âge de survenue d'une inhalation de corps FOREIGN est dans le zéro-quatre ans par an. L'inhalation de corps étrangers plus fréquentes sont l'arachide, arêtes de poisson, des matières plastiques, matériaux métalliques et des semences. La majorité des organismes inhalés étrangers ont tendance à localiser dans la bronche principale droite. *WAJM 2009; 28(6): 368–370.*

Mots-clés: corps étrangers, morbidité, mortalité, Inhalation, Ear, Nose and Throat, au Ghana.

INTRODUCTION

Foreign body inhalation poses a surgical challenge in the practice of Otolaryngology. It is a surgical emergency and occurs in all communities; it requires early diagnosis and prompt management in order to avoid mortality or morbidity. Unfortunately the diagnosis of this condition can be difficult as a history of inhalation may not be volunteered especially by children. Moreover the classical clinical presentation may be absent and symptoms such as irritating coughs or wheeze associated with difficulty in breathing may be mistaken for an upper respiratory tract infection or asthma. Delayed cases of foreign body inhalation may present as bronchopneumonia unresponsive to conventional therapy.

X-rays of neck or chest may not be helpful in diagnosing an early presentation of radiolucent foreign bodies in the airway. A high index of clinical suspicion is therefore required to arrive at a diagnosis so for early management to be effected. The current mortality rate from foreign body inhalation has been quoted workers as between 0% and 1.8%.¹ Some of the common symptoms associated with foreign body inhalation include sudden onset of dyspnoea, stridor, irritating cough, choking symptom, and voice change especially in laryngeal foreign bodies.² Van Looij *et al*⁵ in their review of aspirated foreign bodies in children noted that in children up to three years there was no significant difference in site of location of foreign bodies in the bronchi; however in children aged three or older foreign bodies were commonly found in the right main bronchus due to handling of choking infants by their parents.

The suggested modality of management of inhaled foreign body includes flexible bronchoscopy for diagnosis and rigid bronchoscopy for extraction of foreign bodies.³ In addition to direct laryngoscopy and removal, tracheostomy may sometimes be required especially for impacted foreign bodies in the laryngeal inlet and in the trachea respectively. Recently Sesar *et al*⁴ published a new therapeutic technique (Sesar technique) for removal of inhaled

pins and small rounded foreign bodies. This technique entails rigid bronchoscopic removal of inhaled foreign bodies without using forceps but using postural drainage assisted with suction.

Our aim in this study was to assess the pattern of foreign body inhalation at the Korle Bu Teaching Hospital, Accra Ghana and to outline early diagnosis and preventive measures.

SUBJECTS, MATERIALS, AND METHODS

This was a retrospective appraisal of all patients who were admitted with a diagnosis of inhaled foreign bodies from 1st January 2003 to 31st December 2006. All the patients had rigid bronchoscopy and removal of foreign bodies or when indicated direct laryngoscopy or tracheostomy and removal of foreign body. The theatre records of these patients were analysed with respect to age, sex, type of foreign body removed, location of foreign body in the air way, clinical presentation, and outcome of surgical intervention.

RESULTS

Forty patients made up of 20 males and 20 females were seen over the four - year period. The male to female ratio was 1: 1 and the age of patients ranged from 7 months to 16 years with a mean age of 4.78 years and peak age occurrence in the zero–four year age group (Table 1). The most common inhaled foreign bodies encountered were fish bones in six (15%) patients, and five(12.5%) each with groundnuts, plastic materials, metal material and seeds (Table 2). The common clinical presentation in addition to respiratory difficulty included irritating cough, choking, painful swallowing and whistling sound during breathing.

Table 1: Distribution of Patients by Age and Type of Inhaled Foreign Bodies

Age group (years)	Number (%)
0 – 4	25(62.5)
5 – 9	10(25.0)
10 – 15	5(12.5)
15 – 20	0(0.0)
Total	40(100)

Table 2: Distribution of Patients by type of Foreign Bodies Inhaled

Type of Foreign Body	Number (%)
Groundnut	5(12.5)
Plastic material	5(12.5)
Fish bone	6(15)
Metal material	5(12.5)
Charcoal	2(5)
Seed	5(12.5)
Paper material	1(2.5)
Meat bone	1(2.5)
Foreign body not specified	10(25)
Total	40(100)

Foreign bodies were localized in the right main bronchus in 27 (67.5%) patients, in the left main bronchus in 10 (25%) patients, and in the larynx in three (7.5%) patients.

One patient (2.5%) died during bronchoscopy and one patient (2.5%) had bronchotomy following failed bronchoscopy due to partial migration of inhaled foreign body from the right main bronchus into the posterior mediastinum.

DISCUSSION

We noted from our study that foreign body inhalation is mainly a pediatric problem affecting predominantly the zero-four year age group who constituted 62.5% of patients seen. This findings is similar to other series.^{1,6} The male to female ratio of 1:1 contrasted with a ratio of 2:1 in other published series⁸ possibly due to small numbers of patients in our study.

The commonest inhaled foreign bodies encountered in our studies were similar in classification as inorganic and organic foreign bodies to findings by other workers.⁸⁻⁹

The commonest foreign bodies encountered in our study included ground nut, fish bones, metal material, plastic material and seeds. Majority of inhaled foreign bodies were localized in the right main bronchus with very few localized in the larynx. Our findings are similar to those of Giradi *et al*⁶ who also noted that site of localization of inhaled foreign bodies was bronchial in 78.9%, laryngeal in 6%, and tracheal in 4.5%. The anatomical peculiarity of the right main bronchus (more vertically

placed than the left and relative increase in right tracheobronchial angle with age) may account for localization of most foreign bodies in the right main bronchus. Other findings by Giradi *et al*⁶ included radiopaque inhaled foreign bodies (23.3%), hyperinflation or obstructive emphysema (21.8%), hyperinflation or obstructive emphysema with atelectasis in the same hemi thorax (18%), lobar atelectasis (12.8%), whole-lung atelectasis (6.8%), shift of mediastinum shadow (11%), and aeration within an area of atelectasis (6%). The time between onset of symptoms of inhaled foreign bodies and consultation and treatment quoted by Bloom *et al*¹⁰ was on average 11.6 days with 17.6 days for thin/plastic foreign bodies and 1.6 days for metal/food foreign bodies. Similar observations on late consultation was noted by Anyawu *et al*.¹⁰ Our study did not look at the radiological findings of inhaled foreign bodies, however the delayed consultations seen in some of our patients who inhaled foreign bodies could be due to diagnostic difficulties as a result of nonspecific symptoms associated with this problem and lack of access to specialized centres in the management of inhaled foreign bodies.

Prevention is crucial in our quest to reduce morbidity and mortality. Health

education on the dangers of foreign body inhalation on television, in newspapers and at child welfare clinics will go a long way in reducing the incidence of foreign body inhalation. Other workers have recommended prevention of young children from eating nuts and seed.

Awareness by general practitioners and pediatricians on the need to consider foreign body as differential diagnosis in cases of airway obstruction will promote early diagnosis and early management.

ACKNOWLEDGEMENT

I wish to express my thanks to Dr Clegg-Lamprey for his useful suggestions and comments on this article.

REFERENCES

1. Shivakumar AM, Naik AS, Prashanth KB, Shetty KD, Praveen DS. Tracheobronchial foreign bodies *Indian J Pediatr* 2003; **70**: 793–7.
2. Soysal O, Kuzucu A, Ulutas H. Tracheobronchial foreign body aspiration: a continuing challenge. *Otolaryngol Head and Neck Surg* 2006; **135**: 223–6.
3. Grigoriu B.D, Leroy S, Marquette ChH. Tracheo-bronchial foreign bodies. *Rev Med Chir Soc Med Nat Iasi*, 2004; **108**: 747–52.
4. Sersar SI, Elshazli MM, Abdel Hakam BB, Mahdy M. Therapeutic approaches of inhaled veil pins in the Egyptians. *Clin Otolaryngol* 2006; **31**: 347–9.
5. Van Looij MA, Rood PP, Hoeve LJ, Borgstein JA. Aspirated foreign bodies in children: why are they more commonly found on the left *Clin Otolaryngol Allied Sci*. 2003; **28**: 364–7.
6. Girardi G, Contador A.M, Castro-Rodriguez J.A. Two new radiological findings to improve the diagnosis of bronchial foreign-body aspiration in children *Paediatr Pulmonol* 2004; **38**: 261–4.
7. Iyas B, Amjad C, Naeem-uz-Zafar Khan. Tracheobronchial foreign bodies: A review and analysis during past one year at Children Hospital, Pims Islamabad. *Pak J. Med Sci* 2003; **19**: 51–60.
8. Sersar SI, Rizk WH, Bilal M, El Diasty MM, Eltantawy TA, Abdelhakam BB, *et al*. Inhaled foreign bodies: presentation, management and value of history and plain chest radiography in delayed presentation. *Otolaryngol Head Neck Surg*. 2006; **134**: 92–9.
9. Bloom DC, Christenson TE, Manning SC, Eksteen EC, Perkins JA, Inglis AF, Stool SE. Plastic laryngeal foreign bodies in children: a diagnostic challenge. *Int J Pediatr Otorhinolaryngol* 2005; **69**: 657–62.
10. Anyawu C.H. Foreign Body Airway Obstruction in Nigeria Children. *J Trop Ped* 1985; **31**: 170–173.