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Foreign body in the ear, nose and throat in children: A five year review in Niger delta

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ABSTRACT

Background: Foreign body (FB) injury in children is becoming increasingly common in developing countries. Children tend to be curious and exploratory hence the easily accessible orifices tend to be at risk of this form of injury. This study is to determine the prevalence, treatment outcome and complication of foreign body injury to the ear, nose and throat in children. **Materials and Methods:** A retrospective study of all pediatric patients with FB in the ear, nose and throat (ENT) seen at the ENT surgery department and children emergency ward of our institution from January 2004 to December 2008. Demographic and clinical data were obtained from records of the patients and analyzed. **Results:** There were 202 children with ENT injuries within the period under study, 181 (89.60%) had FB injuries. There were 94 males (51.93%), 87 females (48.07%) male:female ratio of 1.1:1. Age ranged from 2 months -15 years with a mean of 3.71 ± 2.59 years, a mode of 3 years. Most of the patients were below age seven years, highest in the range 0-3 years (61.8%). The nose recorded the highest injury 88 (48.62%). Commonest FB was ornamental bead 51 (28.17%) found both in the ear and the nose. Fish bone constituted the highest FB in the laryngotracheobronchial (LTB) tree and the oesophagus. Twenty-three cases (12.7%) had emergency tracheostomy done. **Conclusion:** Foreign body injuries constitute a significant portion of pediatric ENT trauma in clinical practice. The under 3 years are most affected. There is need for more public education of parents and care givers so as to prevent this avoidable injury.

Key words: Ear nose and throat, foreign body, Niger delta

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INTRODUCTION

Children are curious and exploratory hence foreign body (FB) in the ear, nose and throat is a common clinical problem encountered in children.[1] They either inserts, swallows them or the FB introduced into them by their playmates.[1]

FB injury is an avoidable cause of morbidity and mortality in children[2] and constitutes the commonest cause of Ear, Nose and Throat (ENT) emergencies.[2] They are known to cause serious complications.[3] FB in the ear and nose are easily removed in the clinic.[4] Aspirated FB is one of the common causes of upper airway obstruction in children. Suffocation due to FB is a leading cause of death in children aged 0-3 years.[5] Children in the bid to discover their environment are prone to this form of injuries.[6] Clue to FB aspiration could be sudden cough, choking, dyspnoea and stridor.[6,7] Earlier works in Lagos studied otologic[8] and laryngeal[9] FB in children while other studies in Jos,[10] Osogbo[11] and Ilorin[12] examined ENT injury in children. Paucity of information on FB injury in children in our environment necessitated this study to determine the prevalence, pattern and possible factors responsible for morbidity and mortality associated with FB injuries in children in our environment.

MATERIALS AND METHODS

This is a retrospective study of all pediatric patients with foreign body in the ear, nose and throat seen at the ENT surgery department within the period of January 2004 to December 2008. The institution has the largest ENT centre in the state, therefore, caters for most of the ENT cases in the city and its' surrounding areas of the Niger Delta. The ENT out-patient clinic, children emergency ward and the theatre were the sources of the data collection. The patient's medical records were analyzed for age, sex, the type of FB, presentations, treatment, complications and outcome. Those patients that had trauma to the ear, nose and throat without

evidence of FB seen were excluded from the study. Simple statistical Tables were used to illustrate the data. Categorical data were expressed as mean, mode and standard deviation. Data analysis was done using SPSS for Windows 15.

RESULTS

There were 202 children with various ENT traumas seen within this period and 181 of these were from foreign bodies in the ear, nose and throat. FB injuries accounted for 89.60% of patients with ENT trauma. There were 94 males (51.9%) and 87 females (48.1%) with a male:female ratio of 1.1:1. The age range was from 2 months to 15 years with a mode of 3 years and mean; 3.71 ± 2.59. The majority of the patients were in the age range 0-3 years (61.88%) [Table 1].

In Table 2, the nose had the highest lodgments 88 (48.62%) while the pharynx had the least (1.7%). Ornamental bead constituted the commonest FB in this study Overall, 51 (28.2%) was the most common in the nose and the ears. Fishbone was highest in the laryngotracheobronchial (LTB) and oesophagus. Majority of the FB in the 0-3 years was nasal, however almost all the FB in the LTB, 22 (88%) was in this group [Table 3]. While most patients with FB in the LTB presented with difficulty in breathing (80%), nasal FB presented mainly with rhinorrhoea, [Table 4]. There were emergency tracheostomy operations in 23 (12.7%). The foreign bodies were mostly removed without sequale; most of the complications were in the ear and nose [Table 5].

Plain radiograph of the lateral soft tissue neck and chest was done in all the oesophageal and LTB cases 32, one pharyngeal and two nasal FB. There was positive findings in about 27 (77.14%) and negative findings in 5 (14.28%) of all the 35 cases in which radiographs were required. In the LTB foreign bodies, opacity were found in 3 (12.5%) only, findings were more of emphysema and soft tissue-like shadows [Table 6]. FB in the LTB tends to present within the first 48 hours (88%) while the nasal and otologic FB (60%) presented within one week or more after incident.

DISCUSSION

Foreign body injuries accounted for 89.60% of patients with ENT trauma seen during the study period, an indication that this is quite common in our environment. In this study, there were more males than females[11-13] this could be due to the more physical and adventurous nature of the males than their female

Table 1: Age distribution

Age (years)	Numbers	%
0-3	112	61.88
4-7	55	30.39
8-11	9	4.97
12-15	5	2.76
Total	181	100

Table 2: Foreign body types and areas of lodgement

Type	Ear	Nose	LTB	Pharynx	Oesophagus	Total
Vegetables						
Beans	2	9	0	0	0	11
Groundnut	1	4	11	0	0	16
Other seeds	2	0	0	0	0	2
Non vegetables						
Fishbone	0	0	12	1	2	15
Cotton bud	11	0	0	0	0	11
Foam	0	13	0	0	0	13
Paper	4	6	0	0	0	10
Camphor	1	2	0	0	0	3
Candle wax	3	0	0	0	0	3
Stone	4	2	0	0	0	6
Insect	2	0	0	0	0	2
Metallic						
Battery	2	5				7
Pins	0	0	0	2	1	3
Earrings	4	0	2	0	1	7
Keys	0	0	0	0	1	1
Plastics						
Beads	17	34	0	0	0	51
Eraser	3	5	0	0	0	8
Biro cover	2	7	0	0	1	10
buttons	0	1	0	0	1	2
Total	58	88	25	3	7	181
Percentage	32.04	48.62	13.81	1.66	3.87	100

LTB: Laryngotracheobronchial

Table 3: Age and location distribution

Age (years)	Ear	Nose	LTB	Pharynx	Oesophagus	Total
0-3	20	62	22	3	5	112
4-7	27	23	3	0	2	55
8-11	6	3	0	0	0	9
12-15	5	0	0	0	0	5
Total	58	88	25	3	7	181

LTB: Laryngotracheobronchial

Table 4: Presenting complaints

Symptoms	Nos. of patients	%
Cough/difficulty in breathing	30	16.57
Choking sensation in the throat	10	5.52
Drooling of saliva/odynophagia	10	5.52
Blockage in the ear	21	11.60
Foul smelling nasal/ear discharge	50	27.62
Foreign body in the ear/nose/throat	50	27.62
Bleeding from the nose	10	5.52

Table 5: Complications

Type of complication	Ear	Nose	LTB	Pharynx	Oesophagus
Rhinitis	0	15	0	0	0
Bronchopneumonia	0	0	3	0	0
Suppurative otitis media	5	0	0	0	0
Otitis externa	6	0	0	0	0
Cranial nerve palsy	2	0	0	0	0
Deviated nasal septum	0	1	0	0	0
Alar collapse	0	1	0	0	0
Failed extraction	0	0	2	0	0
Mortality	0	0	2	0	0

LTB: Laryngotracheobronchial

Table 6: X-ray findings

X-ray	Ear	Nose	LTB	Pharynx	Oesophagus
Opaque objects	-	2	3	1	3
Emphysema	-	-	6	-	-
Soft tissue shadow	-	-	5	-	-
Airoesophagogram	-	-	-	-	1
Pneumonic changes	-	-	6	-	-

LTB: Laryngotracheobronchial

counterpart. The age group 0-3 years accounted for most of the FB (61.8%).[7,11]

The commonest FB was ornamental bead 28.18%. This is very commonly used by parents to beautify their children's hair. It is also found as bullet in some toy guns and constituted the highest FB found both in the nose and the ear. This is in contrast to some earlier studies where coin was found to be the highest.[14-17] Coin is rarely in use presently in this country, and this may explain its absence as FB in the LTB and oesophagus in this study. Fish bone was the highest FB in the LTB and oesophagus[7,9,18,19] and not coin.[15-17,20] Other studies found foam, seeds and stones as the commonest FB in the nose.[3,4,19] There were more nasal than otologic FB in our study.[21]

The clinical presentations depended on the area of lodgment. The patients with nasal foreign bodies presented with foreign body in the orifice, epistaxis and sometimes as incidental findings following chronic rhinitis, however majority presented with unilateral fetid discharge; 27.6%.[22] The otologic presentations were blockage of the ear, tinnitus, foreign body insertion and mucopurulent otorrhoea when there is unskilled attempted removal. Some of the FB in the ear was also discovered while cleaning the external auditory canal of wax. In the LTB, the presentation was more of choking, cough, respiratory difficulty while those that presented late had fever, productive cough and wheezing. Oesophageal and pharyngeal FB presented with drooling of saliva, painful and difficulty in swallowing. Some of the FB in this group also came with respiratory difficulty. This is likely due to the FB in the pharynx and oesophagus causing compression to the airway. About 27.62% presented with complaint of FB insertion, ingestion or inhalation.

Distribution of location according to age showed that majority of the FB in the 0-3 years was nasal, however almost all the FBin the LTB was in this group. It is known that in children under 3 years, underdeveloped swallowing mechanism and 2nd molar with inability to grind food well makes them susceptible to foreign body inhalation.[23] Most of the emergency tracheostomy was also in this age group. It appears that FB is the commonest cause of upper airway obstruction in this study in contrast to previous studies in Ibadan[24] and Ilorin[25] where juvenile papilloma was the commonest cause.

There were 23(12.7%) emergency tracheostomy operations done in children with severe respiratory distress. These were found to be mostly patients with FB in the LTB and pharynx that presented late. Majority were in the larynx and trachea. Therefore to reduce mortality in these children there was need to secure airway first before attempt at extraction.[26] The bulk of the patients were found to present after 24 hours of injury. Majority with FB in the LTB presented within the first 48 hours of event, this is not too different with findings in a study in India[27] where 60% presented within 24 hours of aspiration however it is in contrast with an earlier local study where most of the children were brought in several days after incident.[28] In the nose, the presentation was usually after one week with some seen as incidental finding following chronic rhinitis.

Diagnosis of FB in ear and nose was mainly clinical, however for LTB, pharynx and oesophageal foreign bodies, minimum of plain radiograph of the area is required besides the clinician's high index of suspicion.[29-31] In the LTB, X-ray lateral soft tissue neck may show soft tissue-like shadows in the larynx and trachea most often or in metallic FB, opacity.

The treatment for most of these patients with FB in the LTB and oesophagus was examination under anaesthesia and rigid endoscopic removal[32,33] this was contrast to some other studies where balloon extraction[20] and flexibleendoscopy were used.[34,35] The decision to use flexible or rigid endoscopy is often based on the type of foreign body, the large sharp FB are best removed using rigid scopes, experience of the surgeon. The availability is also adeterminant of what type to use. In our centre there is no flexible scope for FB removal. There are studies however that shows there

is no significant difference in their success rate.[36,37]

There were 3 cases of misdiagnosis as bronchitis in those with late presentations. Delayed FB in the LTB can give a clinical picture of chronic bronchitis[38] the radiological findings in those 3 cases were pneumonic changes due to inflammation from the vegetable FB; groundnut.

Most foreign bodies in the nose and ear were diagnosed by rhinoscopy and otoscopy and were removed in the clinic.[4,39,40] The patients with button battery were diagnosed in some cases with plain radiograph which showed the radiopaque FB impacted deep in the nasal cavity. Button batteries are emerging as very dangerous FB due to its ability to cause tissue necrosis following delayed removal.[41] There several attempts by unqualified personnel at removal in two cases of FB in the nose, which did not only cause delayed presentation but also succeeded in pushing the FB deeper into the nasal cavity. This then necessitated removal under general anaesthesia with sequale of alar collapse and septal deviation due to tissue necrosis.[42,43] This kind of foreign body is becoming increasingly important because it is commonly found in most wrist watches and battery operated toys.

Similarly, complications occurred in the ear when untrained personnel tried to remove FB from the external auditory canal, often times they perforate the ear drum in the process. One patient ended up with facial nerve palsy due to such attempted removal.[8]

The mortality recorded was from FB in the LTB (1.2%). These patients presented late and died from respiratory failure soon after arrival in the hospital.

The failed extraction was from a metallic FB in the LTB which was difficult to grasp with forceps because of its size, while the other was a spherical plastic object and both were removed by bronchotomy by the cardiothoracic surgeon. This could mean that not only is the type of foreign body important in terms of removal, the size and shape are also relevant for successful extraction.[44] The groundnut which is amongst the commonest FB in the LTB in this study often disintegrates with time and was therefore removed piecemeal. The fishbone on the other hand were found to be small and more often than not were seen in the larynx especially at the inlet hence the respiratory distress.

CONCLUSION

Foreign body injury in the ear, nose and throat constitutes a major cause of morbidity in children in our environment. Late presentations to the specialist and attempts at removal by the unqualified personnel increase the incidence of both morbidity and mortality. There is also a need for legislation to guide the manufacture and use of ornamental beads in the very young. Public enlightenment campaigns on the dangers of allowing children below 4 years to feed unsupervised should be undertaken.

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