Types of Foreign Bodies in the Ear, Nose and Aerodigestive Tract

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ABSTRACT

Patients of all age groups frequently attend hospitals with the history of foreign bodies (FBs) in their ear, nose and aerodigestive tract. A descriptive cross-sectional study was undertaken in a tertiary hospital to determine the types of foreign bodies in the ear, nose and aerodigestive tract. It included a total of 272 patients of both genders who consecutively attended the Otorhinolaryngology & Head and Neck Surgery outpatient, emergency and referrals from other departments. They were divided into children (below 9 years), adolescents (10 to 19 years) and adults (above 20 years). It was seen that the highest number of cases were children (55.9%), followed by adults (27.6%) and then adolescents. Males presented with more foreign body lodgements in children and adults, but in adolescents there was a female dominance. The commonest foreign body were grains/seeds (18%), followed by bones (17.3%), although there were a total of 20 different types of foreign bodies. It was seen that in children the largest number of foreign bodies were seen in the nose, similarly in adolescents they were in the ear, but in adults they were lodged in the aerodigestive tract. The relationship of age group and site of foreign body lodgement was significant according to the Chi square test ($p < 0.05$). In both genders the ears were the commonest site of foreign bodies, nevertheless this relationship of gender to site of foreign bodies was not statistically significant. Foreign bodies of the ear, nose and aerodigestive tract are relatively common and present most in children.

Keywords: aerodigestive tract, ear, foreign bodies, lodgements, nose.

INTRODUCTION

Patients often present with foreign bodies (FBs) in the ear, nose and aerodigestive tract in all age groups. These cases mostly present to the otorhinolaryngologists, paediatricians and general practitioners. Foreign bodies account for about 11% of cases of emergencies in otorhinolaryngology.[1,2] Studies have shown that children under three years of age are more commonly affected compared to the other age groups.[1,3,4] It is mostly seen in children who have the habit of putting objects in their ears, nose and mouth, which may be due to various factors such as curiosity to explore orifices, imitation, boredom, playing, mental retardation and insanity.[1,5,6] Foreign body insertion in the ear, nose and aerodigestive tract by children also depends on the availability of the objects and absence or presence of watchful caregivers.[7-9]

Studies have shown that the foreign bodies in the ear are more common as compared to the other orifices.[3,4,10,11] Foreign bodies in the ear and nose were found more frequently in children, whereas, the throat was the most common site of FBs in adults and elderly people. The type of foreign body lodged in various orifices depends on its shape and size along with the age of the patient involved. The different types of foreign bodies are classified as living and non-living and amongst the non-living ones are organic and inorganic.[12]Removal of foreign bodies requires good anatomical knowledge along with proper expertise. Foreign bodies, if not removed on time or attempted by an inexperienced person, may give rise to complications that may even be fatal.[5] The study is conducted to find out the different types of FBs in the ear nose and aerodigestive tract in children, adolescents and adults.[13] It also determines the relationship between the age and gender with the sites of lodgement of foreign bodies.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted at a tertiary hospital in Kathmandu, Nepal, in the otorhinolaryngology and head and neck department. The study period was from July 2015 to December 2016. Patients with a history of FBs in the ear, nose and aerodigestive tract of all ages and both genders presenting to the otorhinolarngology outpatient (OPD), emergency department and patients referred from other departments were included in the study. The study group was divided into children (9 years and below), adolescents (10 to 19 years) and adults (20 years and above). An informed consent was taken from the patient or parents/ caretakers in case of children. Data was collected using

predesigned and pretested proforma. A detailed history was taken by interviewing the parents or caretaker in the case of children and from the patients themselves in case of adults.A detailed clinical examination of the ear, nose and throat was performed in the outpatient department. Relevant investigations like x-ray of the affected site, flexible nasopharyngolaryngoscopy, upper gastrointestinal endoscopy and flexible bronchoscopy were performed as indicated. Permission for the study was obtained from the Institutional Review Committee (IRC). Statistical analysis of the data was done using SPSS version 17. Descriptive statistics such as frequency mean and standard deviation was determined and the Chi-square test was used to find out the relationship between age and gender with the sites of lodgement of FBs.

RESULTS

Two hundred and seventy-two patients were included in the study. The age ranged from 9 months to 83 years with the mean age being 15.6 years.The study showed male predominance with 166 (61%) males and 106 (39%) female patients. The ratio between males to females was

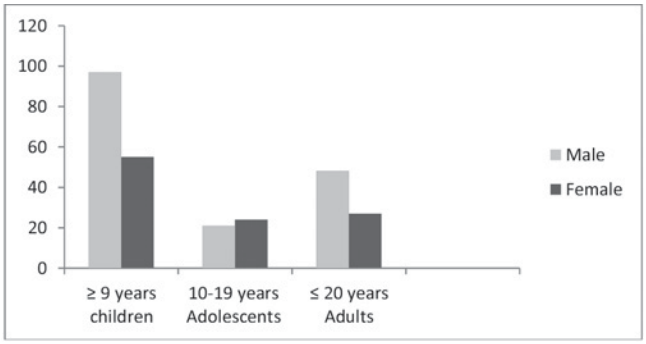

Figure1. Age and gender distribution

1.5:1. The commonest age group affected irrespective of site and type of FBs were children 152 (55.9%), followed by adults 75 (27.6%) and then adolescents 45 (16.5%). There were 97 males (63.8%) and 55 female patients (36.2%) in children. Similarly, adult patients also showed significantly higher number of males 48 (64.0%), compared with females 27 (36%) patients, however, adolescents in contrast showed more female patients (53.3%). In children, the greatest number of foreign bodies were found in 5-year-old males, whereas, in the adolescent age group 15-year-old males were the most

Table 1: Types of foreign bodies: (N=272)

Foreign body	Ear n (%)	Nose n (%)	Aerodigestive tract		Total N (%)
			Food passage n (%)	Airway n(%)	
Grain/seed	18 (16.1%)	24 (32.4%)	5 (6.4%)	2 (25%)	49 (18.0%)
Bone (chicken, mutton, fish)	0 (0.0%)	0 (0.0%)	47 (60.3%)	0 (0.0%)	47 (17.3%)
Eraser	20 (17.9%)	9 (12.2%)	0 (0.0%)	0 (0.0%)	29 (10.7%)
Cotton bud	24 (21.4%)	3 (4.0%)	0 (0.0%)	0 (0.0%)	27 (9.9%)
Bead	11 (9.8%)	15 (20.3%)	0 (0.0%)	0 (0.0%)	26 (9.6%)
Insect	22 (19.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	22 (8.1%)
Coin	0(0.0%)	0 (0.0%)	13 (16.7%)	0 (0.0%)	13 (4.8%)
Leech	0(0.0%)	13 (17.6%)	0 (0.0%)	0 (0.0%)	13 (4.8%)
Bird feather	8(7.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	8 (2.9%)
Plastic toy piece	2 (1.8%)	5 (6.7%)	0 (0.0%)	0 (0.0%	7 (2.6%)
Battery	4 (3.6%)	0 (0.0%)	2 (2.5%)	0 (0.0%)	6 (2.2%)
Denture	0 (0.0%)	0 (0,0%)	5 (6.4%)	0 (0.0%)	5 (1.8%)
Peanut	0 (0.0%)	2 (2.7%)	0 (0.0%	3 (37.5%)	5 (1.8%)
Meat bolus	0 (0.0%)	0 (0.0%)	4 (5.1%)	0 (0.0%)	4 (1.5%)
Pebble	3 (2.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (1.1%)
Leaf	0 (0.0%)	0 (0.0%)	2 (2.6%)	0 (0.0%)	2 (0.7%)
Plastic whistle	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (25%)	2 (0.7%)
Button	0 (0.0%	2 (2.7%)	0 (0.0%)	0 (0.0%)	2 (0.7%)
Metallic screw	0 (0.0%)	1 (1.4%)	0 (0.0%)	0 (0.0%)	1 (0.4%)
Pen cap	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (12.5%)	1 (0.4%)
Total	112 (41.2%)	74 (27.2%)	78 (28.7%)	8 (2.9%)	272 (100%)

Table 2: Distribution of foreign bodies by age groups and sites (N=272)

Age group	Ear n (%)	Nose n (%)	Aerodigestive Tract n (%)	Total N (%)	P value
≤ 9 years	59 (38.8%)	64 (42.1%)	29 (19.1%)	152(100%)	<0.05
10-19 years	28 (62.2%)	2 (4.4%)	15 (33.3 %)	45(100%)	
≥ 20 years	25 (33.3%)	8 (10.7%)	42 (56.0%)	75(100%)	

Table 3: Distribution of foreign bodies by gender and sites (N=272)

Gender	Ear n (%)	Nose n (%)	Aerodigestive Tract n (%)	Total N (%)	P value
Male	70 (42.2%)	46(27.7%)	50 (30.1%)	166 (100%)	0.801
Female	42 (39.6%)	28(26.4%)	36 (34.4%)	106 (100%)	

commonly affected, which contrasted with adults where the most commonly affected patients were 35-year-old females. (Figure 1)

There were 35 living (12.86%) and 237 (87.14%) non-living FBs, and among the non-living there were 105 organic and 132 inorganic. The types of FBs in the ear, nose and aerodigestive tract included grains and seeds, which were found to be the highest 49 (18.0%), followed by bones 47(17.3%), erasers 29 (10.7%), cotton buds 27 (9.9%), insects 22 (8.1%), coins 13(4.8%), leeches 13 (4.8%) etc. Foreign bodies lodgement according to site showed that the most common site were the ears 112 (41.2%), followed by the aerodigestive tract 86 (31.6%) and nose 74 (27.2%). Among the 112 FBs found in the ear, cotton buds 24 (21.4%) were the commonest, followed by insects 22 (19.6%), whereas, grains and seeds 24 (32.4%) were commonest among the 74 FBs in the nose followed by beads 15 (20.3%). However, in the aerodigestive tract out of 78 patients with FBs in the food passage, 47 (60.3%) were bones and 13 (16.7%) were coins. In the airway out of 8 cases,3 (37.5%) cases were peanuts, 2 (25%) each of grains/ seeds and plastic whistles and one was a pen cap. (Table 1) All the foreign bodies in the airway were found in children. (Table 1)

Distribution of FBs by age groups and sites of lodgement were assessed, which showed in children FBs in the nose 64 (42.1%) were found to be the highest with lodgement in the right nasal cavity being more common. In adolescents FBs in the ears were 28 (62.2%) that was the highest among all the sites and was common in the right ear. In adults FBs in the aerodigestive tract were 42 (56.0%), which were all lodged in the food passage. Chi-square test was applied to see the relationship between age groups and sites of foreign body lodgement, which showed a p value of <0.05 (significant). (Table 2)

Distribution of FBs by gender and sites was also looked at, and out of 166 male patients 70 (42.2%) had FBs in the ear, 50 (30.1%) in the aerodigestive tract and 46 (27.7%) in the nose. Similar findings were seen in female patients where 42 (39.6%) had ear, 36 (34.4%) aerodigestive and 28 (26.4%) had nose FBs. There was no significant relation between the gender and sites of FBs (p=0.801). (Table 3)

DISCUSSION

A foreign body (FB) is an object or piece of exogenous material that has entered the body by accident or design in a region where it is not meant to be and can cause damage by its presence if immediate medical attention is not sought.[14] Foreign bodies of the ear, nose and aerodigestive tract are relatively frequently seen in the practice of otorhinolaryngology and head and neck surgery.[1] Patients are frequently brought to the emergency and otohinolaryngology departments with FB lodgement. Although FBs are relatively common, early diagnosis and appropriate management of these cases needs to be done to prevent complications that may lead to morbidity and mortality of the patients.

Among the age groups studied it was seen that the most affected were children who made up 55.9% of the total patients. This age group was the most affected in other studies also, which may be due to the experimental and inquisitive nature of children along with their boisterous playing habits. Insertion of foreign bodies by children may also be precipitated by boredom, frustration and

also mimicking the unhealthy habits of adults like picking their ears and noses.[15-19]Even among children who presented with foreign bodies in the ear, nose or aerodigestive tract the highest number were five-year-old males. This gives credence to the theory that children in this age group are naturally curious and insert foreign bodies in easily accessible places, as indicated by this study that shows the greatest number of foreign bodies in this age group were lodged in the nose, followed by the ear and aerodigestive tract.[1,16]

However, the study also looked at the type of foreign body lodgement in adolescents. These included children from 10 to 19 years of age.[13]Compared to smaller children and even adults this group had lesser foreign body lodgements and most lodgements were considered to be accidental as children in this group would not want only ingest or insert foreign bodies.[20] Unlike smaller children the greatest number of foreign bodies seen were in the ears, followed by the aerodigestive tract.

The other group the study looked at were adults. They presented with foreign bodies more than adolescents but lesser than children. Moreover, the majority of the foreign bodies in this group were lodged in the aerodigestive tract, followed by the ears and nose. It was seen that the foreign bodies in the aerodigestive tract in adults were lodged in the food passage and were some kind of bone (fish, mutton or chicken), which is similar to a study done by Shunyu.[21] This may be due to the food habits of the population under study. In adults it may be due to accidental lodgement or due to some underlying pathology of the digestive tract. It has also been observed that there is an increase in foreign body ingestion during the festival seasons, which may be due to the cultural trends of eating meats and drinking alcohol during this time.[22]

It was noted that twenty different types of foreign bodies were lodged in the ear, nose and aerodigestive tract. The foreign bodies were both living and non-living with the majority being non-living. Even among the non-living the majority were inorganic.[15] The most common were grains/seeds followed by bones (chicken, fish and mutton), erasers, cotton buds, beads, insects, coins and leeches etc. Grains/seeds were also seen to be the most common foreign bodies in a study done in western Nepal. Although the geographical location is different, the cultural and occupational characteristics are similar, hence, probably leading to similar findings.[16] This was in contrast with other studies that showed coins to be the most common foreign body, but in those studies also bones comprised the second most common foreign bodies as was the case in this study.[19,23] Our study revealed comparatively lesser number of airway foreign bodies.

The various age groups were also studied regarding the lodgement of foreign bodies in different sites. In children the commonest site of lodgement was the nose, followed by ears and then aerodigestive tract, which is similar to some studies, nevertheless, others have shown the ear to be the most common site of foreign body lodgement.[1,11,15,16,22,24] In the adolescent group the ears were the most involved organs, with the aerodigestive tract and nose being lesser involved. In contrast adults were more prone to foreign body lodgements in the aerodigestive tract, a result similar to a study done by Parajuli,[22] followed by the ear and nose. It was seen that the relationship between the age groups and lodgement of foreign bodies in various locations was statistically significant.

Assessment of the gender distribution for foreign bodies of the ear, nose and aerodigestive tract was also looked into. It was seen that there was a male predominance in children and adults, which was similar to other studies.[1,2,15,16] However, in the adolescent group females were seen to present more with foreign body lodgement that contrasts with other studies.[1,2,15]In both genders and across all age groups the highest number of foreign body lodgements were seen in the ears, followed by the aerodigestive tract and then the nose that is similar to a study done in the same geographical and cultural area, but is different from studies done in other countries.[1,15] Nevertheless, the relationship between gender and site of foreign body lodgement was not seen to be significant.

Foreign bodies of the ear, nose and aerodigestive tract are common presentation in hospitals. The most commonly affected are children, hence, parents and caretakers should be more vigilant. Removal of these foreign bodies involve various techniques and proper instruments, so help from qualified medical personnel must be obtained at the earliest.

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