

Full Length Research Paper

Correlation of aural foreign bodies with handedness: An observational study in a Nigerian tertiary hospital

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Foreign body in the ear is commonly encountered by otolaryngologist worldwide. The aim of the study is to determine the correlation of aural foreign body with patient's handedness. This is a prospective cross-sectional study of patients with aural foreign body seen in the Accident and Emergency Unit and ENT clinic of University of Ilorin Teaching Hospital, between February 2008 and January 2009. Questionnaire and case notes of patients were used as data instruments for the study. Information retrieved were entered into SPSS version 11.0 computer soft ware and analyzed. A total of 78 consented patients with mean age of 10.6 years (SD =10.1 ± 1.0) were involved. Handedness of the patients showed 50 (64.1%) were right handed, 24 (30.8%) were left handed and 4 (5.1%) were not sure of their handedness or used both hands. In the correlation of handedness where foreign bodies were found, the right handed has more in the right ear in 41 (80.3%) and the left handed has more of the FB in the left ear 9 (33.3%). The P value was 0.0003 with a relative risk of 2.5. Grain/ seed constituted the commonest foreign body in 42.8%. About 64.1% of the foreign bodies were found in the right ear and 35.9% in the left ear. There was correlation between handedness of the patients and site where foreign bodies were found.

Key words: Correlation, foreign bodies, ear, handedness, otolaryngologists.

INTRODUCTION

Foreign body (FB) in the ear is commonly encountered in children by primary care physicians, paediatricians and the otolaryngologist's worldwide (Bressler and Shelton, 1993; Ologe et al., 2007; Afolabi and Ijaluola 2008; Baker, 1987; Bengner and Davis, 2000; Kumar, 2004), however, it is also not uncommon in the adult population. This apparent simple problem could lead to a significant morbidity that may require a costly management if it is not appropriately managed from the onset (Kumar, 2004; Thompson et al., 2003).

In the developed world there are established and continually evolving protocols for its management (Ologe et al., 2007; Kumar, 2004; Thompson et al., 2003; Lin et al.,

2004; Pwalby and Alan, 1997; Brown et al., 2004). However in the resource poor regions of the world such protocol may not exist. Several articles have been published in the otolaryngology literature describing aural FB and their management (Bressler and Shelton, 1993; Ologe et al., 2007; Pwalby and Alan, 1997; Ijaluola, 1986) with little emphasis on its correlation with handedness only in children (Peridis, 2009).

The aim of the study is to determine the correlation of the FB insertion into the ear with patient's handedness (right handed or left handed).

METHODS

It is a year hospital based cross-sectional study on the correlation of the FB insertion into the ear in relation to the patient's handedness (right handed or left handed), seen in ear, nose and throat (ENT) departments and the accident and emergency (A/E)

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Table 1. Age and sex distribution of the patients seen with aural foreign bodies.

Age group (years)	Sex (%)		Total (%)
	Male	Female	
3 - 10	31 (67.4)	10 (31.2)	41 (52.6)
11 - 20	8 (17.4)	7 (21.9)	15 (19.2)
21 - 30	6 (13.0)	7 (21.9)	13(16.7)
> 30	1 (2.2)	8 (25.0)	9 (11.5)
Total	46 (59.0)	32 (41.0)	78 (100)

units of the University of Ilorin Teaching Hospital (UIITH). Permission for the study was obtained from relevant hospital authorities. UIITH is a tertiary health institution in the middle belt of Nigeria with patronage from eight constituents' states of the federation. The study was carried out between February 2008 and January 2009.

The study involved administration of a structured questionnaire and use of patient case notes after an informed consent obtained from the patients/caregivers. The patients were recruited to the study as they present in the hospital with history of FB in the ear. One hundred and forty five patients presented and all consented to participate in the study. The inclusion criteria were patients with self inserted FB, others whose FB were inserted by playmates/ siblings or where the patient could not give the information were excluded from the study. The information obtained included the biodata (the age, sex), handedness of the patients, type of foreign bodies, the site where found, the level of surgeon either registrar, senior registrar or consultant who removed the foreign body, attempt at removal, the complication noticed before and after removal of the FB, the type of treatment offered and the approach to the foreign body whether permeal or post-auricular approach, under restriction or general anaesthesia as well as the outcome whether successful or failed removal. All the information obtained were edited and entered into the computer for analysis using SPSS 11.0 statistical software package and the correlation, the relative risk and the value of significance calculated ($P \leq 0.05$).

RESULTS

A total of 78 patients were involved in the study. The age range of the patients was 3 - 70 years with a mean age of 10.6 years ($SD = 10.1 \pm 1.0$), median age of 9.0 years and modal age of 5.0 years. Forty-one (52.6%) were aged 3 -10 years, 15 (19.2%) were 11 - 20yrs, 13 (16.7%) were 21 - 30 years (Table 1). There were 46 (59.0%) males and 32 (41.0%) females with M: F = 1.5:1. Handedness of the patients showed 50 (64.1%) were right handed, 24 (30.8%) were left handed and 4 (5.1%) were not sure of their handedness or used both hands and most of whom were in the paediatric age group (< 5 years of age).

Grains/ seeds constituted the commonest foreign body in 34 (42.8%), beads noted in 14 (17.9%), stone in 9 (11.7%), cotton wool in 7 (9.0%), eraser end of pencil in 4 (4.8%), paper and insects were 3 (3.4%) each, earring 2 (2.8%), toy 2 (2.8%) and stick constitute 1 (1.4%).

About two-thirds 50 (64.1%) of the foreign bodies were found in the right ear and 28 (35.9%) in the left ear.

Only 5 (6.2%) presented to the hospital within 0 - 5 h of

insertion of foreign body, while 17 (21.4%) presented within 6 - 24 h, 29 (37.2%) presented within 1 - 5 days, and the remaining 27 (35.2%) presented after 5 days.

Many of the patients 46 (58.6%) have attempted removal before presentation to the hospital while 32 (41.4%) made no attempt at removal of FB.

Almost half 38 (49.0%) of the foreign bodies were removed by senior registrars while 21 (26.2%) by consultants and only 19 (24.8%) were removed by the registrars.

Most of the FB 73 (93.1%) were removed using Jobson Horne's probe under direct visualization while 3 (4.1%) had syringing done and only 2 (2.8%) were removed in the theatre under general anaesthesia.

Of all the patients who presented, 59 (75.6%) did not have any complication on presentation, while 10 (12.8%) had bruises or bleeding during attempt at removal either at home or by family physician and 7 (9.0%) had otitis external and 2 (2.6%) with perforation of the tympanic membrane.

The correlation of age and sex with the incidence of foreign bodies revealed that cases of FB in the ear were more prevalent among male children compared with females of the same age (Table 1). Correlation of handedness showed (Table 2) that the proportion of the patients that are right handed are more among the males 75.4% than the males 73.9%, however, this observed difference was not statistically significant ($P = 0.865$). In the correlation of handedness with where FB was found (Table 3), the right handed has more of the foreign body in the right ear 41 (80.3%) and the left handed has more of the FB in the left ear 9 (33.31%). The P value was 0.0003 with a relative risk of 2.5.

DISCUSSION

Aural FB were commonest in younger children particularly the under 5's (Benger and Davis, 2000; Kumar et al., 2005; Hon et al., 2001; Kevin et al., 2004; Balbani et al., 1998; Bhatia, 1987) and mainly the items easily available to patients (Bressler and Shelton, 1993; Benger and Davis, 2000; Kumar et al., 2005; Kevin et al., 2004). Grain/seed formed the staple food in most household while bead are common dressing accessories as well as

Table 2. Handedness of the patients with gender.

Handedness	Gender (%)		
	Male	Female	Total
Right	65 (73.9)	43 (75.4)	108 (74.5)
Left	18 (20.5)	11 (19.3)	29 (20.0)
Both	5 (5.6)	3 (5.3)	8 (5.5)
Total	88 (60.7)	57 (39.3)	145 (100)

$\chi^2 = 0.03$, p -value = 0.865, $df = 1$.

Table 3. Handedness with site of aural foreign bodies.

Handedness	Right (%)	Left (%)	Total (%)
Right Hand	41 (80.3)	9 (33.3)	50 (64.1)
Left Hand	8 (15.7)	16 (59.3)	24 (30.8)
Both Hands	2 (4.0)	2 (7.4)	4 (5.1)
Total	51 (65.4)	27 (34.6)	78 (100)

Relative risk = 2.5. P value = 0.0003.

prayer rosary for the catholic faiths and Muslim faiths. Cotton wool was particularly used as cotton buds and has been found to be an important aetiology of FB impaction most especially among the adult female population in this study probably due to their high cosmetic sensitivity in attempt to keep their ear clean. Previous study done has found this to be a high risk factor in traumatic membrane perforation (Ologe, 2002). Stone and writing materials, such as eraser were commonly available to children, more so was the peer group influence which was also noted to be an important factor in the act of foreign body insertion into the ear among the paediatric population.

However, no studies in this environment had correlated the location of foreign body with handedness. Child hand's use preference starts at the age of 5 months and is more space dependent rather than object dependent. At the age of 14 - 25 months is more consistent, which is a developmental precursor of adult handedness. Some studies have expressed the principle of body midline crossing in handedness and foreign bodies (Peridis, 2009) and their findings showed that ipsilateral interaction is faster and accurate than contralateral effort (Peridis, 2009; Marschik, 2008; Michel et al., 2006). Findings from this study showed that there was significant correlation between handedness and site of aural foreign body. The relative risk of 2.5 further supports the fact that handedness of an individual determine the site of aural foreign body (p value = 0.003).

From our studies we found the FB to be commoner in the males than the females in the ratio of 1.5: 1 which is similar to other reports (Ologe et al., 2007; Baker, 1987; Kumar, 2004; Ijaluola, 1986; Bhatia, 1987). From our studies the ratio of right handedness to left handedness

is about 2:1 which indicated that majority of the studied population with foreign body in the ear were right handed, which is similar to previous report (Peridis, 2009; Hon et al., 2001) thus there is high tendency for insertion of FB in the right ear than the left ear both in the paediatric and adult population in the data.

Late presentation of our patients is not comparable to a developed area of the world where over 90% of the patient presented within 24 h of insertion of foreign body (Kumar, 2005; Hon, 2001; Balbani et al., 1998; Bhatia, 1987). Almost half of the foreign bodies (49%) were removed by senior registrars in otolaryngology, then about 24.8% by the registrars and about 26.2% by the consultants.

The mindset of the average health care givers in centers where otolaryngologist are available or within our reach and that aural foreign bodies are the responsibility of the otolaryngologist to manage and this was validated by the title of a recent report. "Removal of ear and nasal foreign bodies where there is no otolaryngologist may be the reason for direct referral (Bressler and Shelton, 1993; Ologe et al., 2007; Kumar, 2004; Kumar et al., 2005).

The senior resident or consultant in otolaryngologist often find himself occupied with the simple task of the specialty rather than a more challenging knotty issue of the specialty (Benger and Davis, 2000; Kumar et al., 2005).

About 2.1% of the patient presented with tympanic mem-rane perforation which lower than other reports of traumatic tympanic membrane findings (Bhatia, 1987; Ologe, 2002).

About 58.6% of the patient that presented during the study period have had attempt at removing the FB with

no success which is higher than the value recorded by Bressler and Shelton, 1993).

Over 97% of the patient were managed in the office setting without general anaesthesia using either jobson horne's probe or aural syringing (Ologe et al., 2007; Lin et al., 2004; Ijaduola, 1986; Kumar et al., 2005; Hon et al., 2001). This is much higher than other series reporting as low as 70% (Benger and Davis, 2000; Kumar, 2004; Thompson et al., 2003). In some centers cost of removal of aural FB under general anaesthesia is differently high being 2 - 3 times the cost of office or clinic removal and about twice the cost of aural syringing (Kumar, 2004), while in our centre this almost 10 times the cost of removal (Ologe et al., 2007).

The outcome of this study showed that all foreign bodies were removed successfully. In conclusion, while characteristic of FB were not much different from known data, our patient tends to present late, based on the value of attempted cases, statistically there is significant difference between handedness and sex as well as site where FB was found. There is need to develop a programme that will be beneficial to the primary care physician, emergency medical officers to enhance their proficiency in this small but challenging tasks.

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