Study on Clinical Presentation of Ear and Nose Foreign Bodies

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Abstract Ear and nose foreign bodies are common problems affecting the children but adults are not an exception. A prospective study involving 87 patients is undertaken concentrating on presentation of patients with various types of ear or nasal foreign bodies. In the present study common presenting complaints and uncommon presentation scenarios encountered by us like a nasal foreign body with intra cranial complications, an impacted middle ear foreign body with mastoiditis is discussed. The present article emphasizes the need of considering presence of foreign bodies even in the absence of appropriate clinical signs and symptoms suggestive of a foreign body in ear or nose.

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Introduction

A patient presenting with a foreign body in ear or nose is a common scenario in otolaryngology department. Except for the threat of being aspirated and becoming a foreign body of lower airways, a foreign body of nose is a condition which can easily be managed when detected early. If ignored beyond few days a patient with a foreign body in nose presents with unilateral foul smelling nasal discharge. Children are commonly affected by nasal foreign bodies where as ear foreign bodies can occur even in adults frequently. An aural foreign body usually is asymptomatic but can involve damage to tympanic membrane or middle ear by itself or by improper management during removal. The etiology of foreign bodies in nose or ear has been ascribed to general curiosity and a whim to explore orifices in children, playful insertion of foreign bodies into others' body parts, accidental entry of foreign body, preexisting disease in ear causing irritation, habitual cleaning of ear and nose with object like ear buds [1, 2]. Foreign bodies in ear or nose can be classified in many ways like organic–inorganic, animate–inanimate, metallic–nonmetallic, hygroscopic–non hygroscopic, regular or irregular, soft or hard etc., according to their nature [3]. The method of removal usually depends on the type of foreign body, its position, and cooperation of the patient with a foreign body [4, 5]. Frequent occurrence of unusual presentation with uncommon complication has made us to take up a study on foreign bodies in ear and nose.

Materials and Methods

A prospective study involving 87 patients presenting to a tertiary care referral hospital over a period of 8 months is undertaken concentrating on presentation of patients with various types of ear or nasal foreign bodies. All patients with suggestive history of foreign body entry into ear or nose are included. Those patients with no suggestive history but were found to have the foreign bodies are also included in the study. Patients with complications arising out of foreign bodies whose extraction is done at a different centre are excluded. Patients with foreign bodies in throat or bronchus were excluded from our study as they present with more apprehensive state of mind and were not immediately willing to participate in any study.

Discussion

Of the 87 patients 51 were having nasal foreign body (NFB) and 36 were having ear foreign body (EFB). There is no gender predilection observed in our study either for nose or EFB. Two of NFB and four of EFB patients were having bilateral foreign bodies and the rest of the patients had all either unilateral nasal or EFB.

NFB is limited to children less than 12 years in our study and 1–5 year age group of patients were more commonly affected than the others (Chart 1). This age group corresponds with their curious probing nature of exploring orifices. In 37 patients with NFB, the foreign is in the anterior nasal cavity along the floor between the inferior turbinate and septum corresponding to nasal valve area. Other sites were posterior third of nasal cavity (8 patients) and in front of middle turbinate (6 patients). An incidental finding in our study is that NFB was found commonly on right side in children who have self inserted the foreign body with their dominant right hand.

Most patients (18 patients) with NFB were asymptomatic when presented to hospital less than few hours after

entry of foreign body (Table 1). Those who present after 4 days of entry tended to have unilateral foul smelling nasal discharge (13 patients). Blood stained discharge or frank bleeding was usually seen in patients who were attempted for removal of foreign body at a different centre. Vestibulitis of nose was seen in 7 patients. Patients with vegetable hygroscopic foreign bodies like pulse seeds (6 patients), custard apple seeds (4 patients), tamarind seeds (5 patients), corn piece (2 patients), pea nut (4 patients) predominated in our study on NFB. Usually investigations are not necessary for removal of NFB unless they are planned under general anesthesia. 12 patients of NFB required general anesthesia for reasons like a posteriorly placed foreign body, an impacted foreign body, or an uncooperative child [6]. The extraction of NFB is achieved by a forceps or hook with or without endoscopic guidance. Some of the techniques described in literature like usage of balloon catheter, nasal positive pressure were not utilized in our study [2, 7, 8]. The findings regarding presentation of NFB coincided with the available literature except for few unusual presentations or complications described in the following case report extracts from our study.

Case Report 1

An 8 year old mentally challenged female child was brought to us with left sided foul smelling nasal discharge since 1 month, weakness of both upper and lower limbs on right side for 3 days. Patient had frequent episodes of upper respiratory tract infections since childhood, suggestive of immune suppression but no history of foreign body entering nose. After discussion with pediatrician the patient was posted for exploration and removal of a possible NFB followed by management of right hemiparesis. Hematological and biochemical investigations required towards finding fitness for general anesthesia were normal. Plain Radiograph of paranasal sinuses showed opacification of left nasal cavity and left side sinuses. Under general anesthesia and endoscopic guidance a piece of balloon was

Table 1 Presenting symptoms of NFB and EFB

Nasal foreign body—total 51 Symptom—number ^a (%*)	Ear foreign body—total 36 Symptom—number ^a (%*)
Asymptomatic—18 (35)	Asymptomatic—19 (52)
Nasal block—9 (17)	Ear pain—5 (14)
Nasal irritation—4 (8)	Ear discharge—7 (19)
Unilateral foul smelling nasal discharge—13 (25)	Ear bleeding—1 (2)
Nasal discharge non foul smelling—8 (16)	Decreased hearing—6 (16)
Sneezing—7 (13)	Foreign body sensation—5 (14)
Pain—6 (12)	Ear itching—4 (11)
Blood stained discharge—5 (10)	Tinnitus—2 (5)

*indicates that percentages do not add to 100 as they are rounded. ^a indicates that the number do not add equal to total number of patients as some may have multiple symptoms

extracted from left nasal cavity. The foreign body was surrounded by thick tenacious mucinous discharge, granulation tissue and debris filling the entire nasal cavity on left side and extending into nasopharynx and sphenoid sinus region. The debris was positive for fungal elements and was sent for fungal culture and sensitivity. Within few hours after extraction of NFB, Computerized Tomography (CT) scan of brain was taken which revealed acute infarction involving left temporoparietal region which is the cause for the right hemiparesis. Pediatrician initiated treatment for hemiparesis with physiotherapy and oral itraconazole in view of fungal debris and history of immune suppression. Fungal culture was positive for species *Curvularia lunata* sensitive to itraconazole and amphotericin. Literature search revealed that *Curvularia lunata* is associated intracranial invasive complications including vascular thrombosis even in immunocompetent individuals [8, 9]. Hence a Magnetic resonance imaging (MRI) of brain with contrast and Magnetic resonance angiography (MRA) were done after receiving culture report at the end of 4 weeks. MRA showed thrombosis of left internal carotid artery at the level of sphenoid sinus leading to non visualization of anterior and middle cerebral arteries on left side explaining the reason for infarction in left temporoparietal region and hemiparesis (Fig. 1).

Patient recovered after about 4 weeks of treatment with no residual neurological impairment as children possess good neuronal plasticity. In the recovery period mother of the child recalled an incident in the past, when a balloon burst in front of the face of the child while she was playing with it, which could be a cause for the foreign body entry. We report this case as our literature search did not reveal any report of a NFB in an immunocompromised individual

to cause vascular intracranial complications because of invasive fungal infection.

Case Report 2

A 6 year old child was brought to us with complaints of bilateral blood stained nasal discharge, fever since 15 days. Anterior rhinoscopy revealed a septal perforation of 1 cm size with an irregular margin surrounded by granulation tissue at the bony cartilaginous junction. The inferior and middle turbinates on left side were partly necrosed with granulation tissue surrounding the anterior end of middle turbinate. Clinically it appeared like a granulomatous condition of nose. Plain Radiograph of paranasal sinuses revealed an irregular radio opaque shadow in left nasal cavity suggestive of rhinolith. Tissue biopsy and extraction of rhinolith was planned under general anesthesia. But it was surprising to note that there was a deformed rusted button battery in the left nasal cavity surrounded by granulation tissue. Biopsy of granulation tissue revealed non-specific inflammatory tissue. Hence the cause for septal perforation and necrosed turbinates is ascribed to chemical reaction caused by button battery in the nasal cavity [10]. Patient's nasal cavity healed well with residual septal perforation at the end of 2 weeks post extraction of button battery.

Case Report 3

A 5 year old male child presented with NFB, a pebble seen in the posterior part of right nasal cavity along the floor. A failed attempt to remove the foreign body was made at a different centre resulted in turbinate injury and moderate

Fig. 1 **a** MRI T2 weighted image showing thrombus in left internal carotid artery with obliterated lumen (Arrow) as compared to right side. **b** MRA showing non visualization of anterior and middle cerebral arteries on left side (arrow heads) with consequent cerebral atrophy due to thrombus in left internal carotid

bleeding. As the child was uncooperative for further attempts without sedation, extraction of NFB under general anesthesia was planned. The deep seated foreign body was shown to the anesthetist just before inducing anesthesia so as to justify the need of general anesthesia for the patient as most foreign bodies in nose can be extracted without the need of anesthesia. Anesthetist preoxygenated child with mask ventilation and then intubated. But to our surprise foreign body was not found under general anesthesia in the nasal cavity, nasopharynx or oropharynx. Patient was extubated and a chest radiograph of chest is taken to rule out aspiration of foreign body. Clinical chest assessment and radiograph did not suggest foreign body aspiration. 2 days later patient passed the NFB in stools without any further sequelae. Preoxygenation of child with mask ventilation before intubation has resulted in passage of NFB into throat which the patient has swallowed and passed later in stools. We felt we could have avoided this eventuality by placing an anterior pack in the nostril with the foreign body before mask ventilation which could have prevented migration of foreign body into throat by not allowing the force of ventilated air to act on NFB.

Unlike NFB, patients with EFB were not children alone as adults too were affected (Chart 2). The entry of EFB took place either accidentally, was self inserted in some by children or playfully inserted by others. Adults who were having preexisting otitis externa had a habit of cleaning the ear with ear buds and landed with broken heads of cotton buds [1]. Insects were extracted in six of the patients, out of whom two were live insects which have entered ear canal during night as they were asleep. Maggots were seen in one elderly patient with acute suppurative otitis media who was bedridden with paralysis. Majority of patients with EFB were asymptomatic (Table 1). Itching and tinnitus in the ear is associated with patients who had coexistent otomycosis developed over swollen vegetable or hygroscopic foreign bodies. In our study six patients did not even know they have a foreign body until they were told by treating doctor. Frank bleeding from ear was seen in one patient because of forceful entry of a metallic foreign body. In majority of patients, except those having a hygroscopic foreign body, aural syringing was very effective in removing EFB. Suction and extraction with a forceps or hook are also used in our study. General anesthesia was required in seven patients who had edematous ear canal with impacted foreign body. Unusual presentation of mastoiditis was seen in one patient whose details are given below.

Case Report 4

A 10 year old girl child presented with blood stained purulent discharge with pain in the right ear since 1 week

Fig. 2 Intra-operative photograph showing a metallic foreign body impacted in the middle ear cavity (arrow) with surrounding granulation tissue and part of mastoidectomy cavity (M)

Fig. 3 Photograph of the foreign body, a metallic stud used as a decorative piece in fancy dressing

and fever since 2 days. On repeated questioning, the patient gave a history of entry of foreign body into the right ear 3 weeks back which was attempted in vain to be removed by a quack. On examination there was edematous right external auditory canal with granulations, blood stained mucopurulent discharge and mastoid tenderness. Plain Radiograph of both mastoids lateral oblique view showed a radio opaque object and clouding of right mastoid region indicating a possible metallic foreign body and right mastoiditis. Under antibiotic coverage and general anesthesia the right ear is explored by postaural approach and a metallic foreign body impacted in the middle ear mucosa with surrounding granulation tissue was visualized (Figs. 2, 3). The retained foreign body, a metallic stud used as a decorative piece in fancy dressing, has caused otitis

externa, otitis media with acute mastoiditis on right side. Simple mastoidectomy was followed by the foreign body extraction from external auditory canal as it was planned before the procedure. Tympanoplasty with temporalis fascia is done for the perforation of tympanic membrane and auto incus is used to repair ossicular discontinuity. We felt the impaction of foreign body in middle ear and ensuing inflammation could have been avoided if the patient were to be treated initially by a trained medical person [11].

Conclusion

The presentation of NFB can be asymptomatic in patients presenting early and unilateral foul smelling nasal discharge is the most common presenting complaint in delayed presentations. However, presence of a foreign body in nose should be considered even in patients who have nasal symptoms associated with intracranial complications or a condition mimicking granulomatous disease of nose. It may be useful keep an anterior nasal pack gently in the nostril with a deep seated foreign body, without disturbing the foreign body, to avoid aspiration while ventilating the patient with mask before inducing general anesthesia. Most patients with EFB are asymptomatic but presence of it should be considered with patients having acute inflammatory signs in ear or mastoid and a thorough history taking with a high index of suspicion towards a foreign body entry is necessary.

Conflict of interest None.

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