

Childhood Nasal Foreign Bodies: Analysis of 1724 Cases

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Original Investigation

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Abstract

Objective: This study evaluates the characteristics of the foreign bodies removed from the nose, the treatment methods used, and the complications associated with the foreign body, and discusses the reports in the literature.

Methods: Age, gender, type of foreign body, side of nose, clinical symptoms, complaints, diagnosis and treatment methods were retrospectively evaluated in all 1724 pediatric patients with foreign bodies.

Results: Of the 1724 patients, 841 (48.7%) were female and 883 (51.3%) were male. Their mean age was 4.3±3.06 years (age range: 4 months-16 years). Foreign body was found on the right side in 928 (53.8%), on the left-side in 768 (44.5%) and bilaterally in 28 (1.6%) patients. The foreign bodies were inorganic substances such as beads, paper, napkins, toy parts,

batteries, pencils, erasers in 1287 cases (74.7%) and organic materials such as hazelnuts, walnuts and fruit seeds in 437 cases (25.3%). The foreign bodies were extracted in outpatient settings in 1709 cases. Fifteen patients in whom the foreign body was located in the posterior region and/or who were uncooperative were treated under anesthesia. The most common complication was epistaxis. Septal perforation was seen in one patient with alkaline battery.

Conclusion: In pediatric patients presented to the otolaryngology and the pediatrics clinics with complaints involving nasal obstruction, unilateral purulent nasal discharge, epistaxis, and foul odor, possibility of a foreign body in the nose should be kept in mind.

Keywords: Nose, childhood, pediatrics, foreign body

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Introduction

Nasal foreign bodies constitute an emergency of the ear, nose, and throat (ENT) and are more common in children (1). Nasal foreign bodies may also be life-threatening in case of aspiration. According to various studies, nasal foreign bodies account for 19-49% of the foreign bodies encountered in ENT clinics (2). Many cases are detected incidentally during the examination of patients with nasal obstruction, unilateral nasal discharge, and epistaxis. Foreign objects retained for a long time may present with complications such as sinusitis, otitis, meningitis. Therefore, in patients with unilateral purulent nasal discharge, epistaxis, and foul odor in the nose, the presence of nasal foreign bodies should always be suspected (3). Foreign bodies can usually be removed in outpatient settings; however, anesthesia may be

needed depending on their location and the patient's cooperativeness.

In this study, 1724 patients with nasal foreign bodies were evaluated and compared with those reported in the literature in terms of demographic characteristics, diagnosis, treatment, and complications.

Methods

The study was approved by the local Ethics Committee of University of Health Sciences, Kayseri Training and Research Hospital (Approval Date: 20 March 2018; No: 52332816/13) and conducted in accordance to the Declaration of Helsinki. It was designed as a retrospective cohort study; thus, no written informed consent was obtained from the patients.

Study subjects

This retrospective study was conducted at a tertiary care hospital. We retrospectively analyzed 1724 patients who presented to the ENT clinic and had foreign bodies removed from their nose in the period from January 2014 through December 2017. The age, gender, type of foreign body, side of nose, clinical symptoms, complaints (epistaxis, unilateral purulent nasal discharge or nasal congestion, foul odor, etc.) were evaluated from the patient records retrospectively.

Statistical Analysis

All statistical analyses were performed using the Statistical Package for the Social Sciences version 12.0, (SPSS Inc., Chicago, IL, USA) statistics software. Continuous variables were expressed as mean values \pm standard deviation. Categorical variables were expressed as numbers and percentage.

Results

We retrospectively evaluated the data from 1724 pediatric patients with foreign bodies. All patients routinely underwent an anterior rhinoscopic examination with a nasal speculum and additional endoscopic nasal examination was performed in cases in which the foreign bodies could not be visualized. Of the 1724 patients, 841 (48.7%) were female and 883 (51.3%) were male. Their mean age was 4.3 ± 3.06 years (age range: 4 months-16 years). In 431 (25%) of the cases, the family noticed the incident and consulted a doctor. Other reasons for referral to the ENT clinic were self-report of child, nasal congestion, bleeding, and foul odor. The foreign body was located on the right-side in 928 (53.8%), on the left-side in 768 (44.5%) and bilaterally in 28 (1.6%) patients (Figure 1). When the age distribution was assessed, 36% of the cases (623 cases) were between 2 and 5 years of age (Table 1).

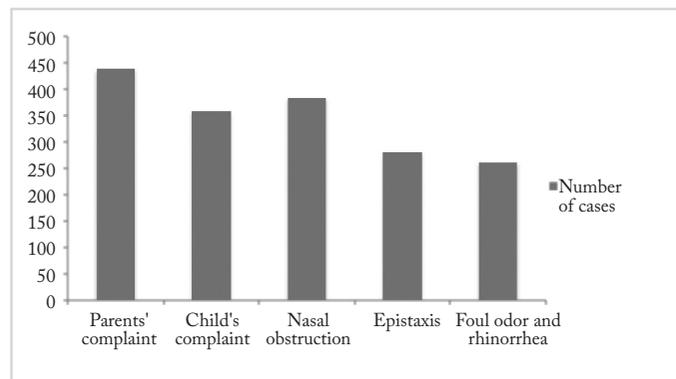


Figure 1. Evaluation of symptoms and complaints of patients

The extracted foreign bodies consisted of both organic and inorganic substances. Inorganic substances such as beads, paper, napkins, toy parts, batteries, pencils, erasers were extracted in 1287 cases (74.7%), whereas organic materials such as hazelnuts, walnuts and fruit seeds in 437 cases (25.3%) (Table 1). More than one foreign body were extracted in 24 cases. In most of the cases (1709 cases, 99.1%), foreign bodies were situated in the anterior part of the nasal cavity, between the inferior turbinate and the septum, or in other words, not posterior to the middle turbinate alignment. The foreign bodies with anterior localization were removed in the examination room with the help of a speculum, a suction device, a foreign body curette, and forceps. In 15 cases, because of the posterior location of the foreign body, and/or the patient's inability to cooperate, the patient was treated under sedation in the operating room. In addition, the foreign body was removed after oro-tracheal intubation due to the risk of aspiration in three of these patients.

The most common complication after foreign body extraction was epistaxis. This complication was seen more commonly especially in patients with hard and irregularly shaped foreign bodies such as a plastic toy part or a stone. None of these patients had any bleeding that required nasal packing. Septal perforation was found in one patient who had an alkaline battery. Despite the presence of intense mucosal necrosis, cartilage necrosis did not develop in the other patients in whom batteries were extracted. Antimicrobial and nasal douche with isotonic saline solution were recommended to the patients with mucosal injury. No additional complications such as synechiae were observed during the postoperative follow-up period.

Discussion

Nasal foreign bodies are usually seen in early childhood (1, 2). While a cause of substantial panic in the family, nasal foreign bodies can lead to various complications, but not to a life-threatening condition in general (2). However, the risks of aspiration should be kept in mind in cases of foreign bodies, especially in those located in the posterior region. Such cases are also very common and have an important role in the ENT practice. For example, in a study examining the foreign bodies in the ear, the nose, and the throat by Mukherjee et al. (3), foreign bodies were reported to be most often seen in the nose (44%).

Nasal foreign bodies are usually seen in the first decade when the child starts moving and playing and attempts to know the

Table 1. Classification of foreign bodies by age groups of patients and types of foreign body

| Foreign body | Age 0-2 yrs (n) | Age 2-5 yrs (n) | Age 5-10 yrs (n) | Age \geq 10 yrs (n) | Total (n, %) |
|----------------------------------|-----------------|-----------------|------------------|-----------------------|--------------|
| Paper, napkin, sponge | 116 | 177 | 125 | 65 | 483 (28.0) |
| Plastic button, bead, toy, stone | 163 | 188 | 83 | 28 | 462 (26.7) |
| Hazelnut, walnut, fruit seed | 134 | 118 | 133 | 52 | 437 (25.3) |
| Pen, paint, eraser | 31 | 138 | 133 | 34 | 336 (19.4) |
| Battery | - | 2 | 4 | - | 6 (0.3) |
| Total (n) | 444 | 623 | 478 | 179 | 1724 |

environment. It is less common after 10 years of age. In our study, 61.8% of the cases were within the first 5 years of age and 89.7% within the first 10 years of age. In adulthood it is more often seen in adults with mental problems (1). Genderwise, it is more common among boys (3). In our study, male patients constituted more than half of this series and this was found consistent with the literature. It has been previously reported that foreign bodies are more common on the right side because most patients (51.3%) are right-handed (4, 5). We found a foreign body in the right nostril in 928 (53.8%), in the left nostril in 768 (44.5%) and in both nostrils in 28 (1.6%) of the patients.

Nasal foreign bodies, in general, do not cause pain and can remain in the nose without being noticed for a long time. However, nasal congestion, unilateral purulent nasal discharge, epistaxis, foul odor can be the presenting symptoms (6). A child with unilateral purulent nasal discharge should be examined for the possibility of a foreign body. Also, a study by Chiun et al. (7) reported that 75% of the cases presented to the emergency department were self-reporting cases that they inserted a foreign body into their nose. In our study, 25% of the cases were noticed by the family and 20% of the cases were directly consulted to a doctor with a complaint of a foreign body following the child's report. Other patients presented with nasal obstruction, discharge, foul odor. None of the foreign bodies were incidentally detected (Figure 1).

The types of foreign bodies can be classified as organic and inorganic substances. There are different results in the literature. In a study, Chiun et al. (7) reported the most common foreign bodies as plant seeds and plastic parts. Also, a study by Çelik et al. (8) reported beads and plant parts to be more common in their study population. In our study, soft inorganic foreign bodies (28%) such as "paper, napkin, sponge" were more common (Table 1).

Successful removal of a nasal foreign body depends on the location of the body, its shape, patient cooperation and the experience of the physician. While interventions are performed in outpatient settings, foreign bodies may migrate to the respiratory tract, especially in young children, and can cause respiratory failure or even death. In their study including 43 pediatric patients, Chiun et al. (7) reported that 53.4% of their patients underwent an intervention under general anesthesia. In our study, only 15 patients (0.08%) underwent sedation and/or general anesthesia. In our clinic, the patients were seated in their parent's lap and kept in a stable position during the intervention. The foreign body was removed with the help of an alligator forceps, and a curette, and an endoscope was used wherever needed. Intervention under sedation, either for the posterior nasal cavity or in patients unable to cooperate, carries the risk of some complications. Anesthesia, however, should also be considered as an additional risk factor. Furthermore, emergency tracheotomy conditions should be provided during the extraction of a foreign body located near the choana.

Nasal foreign bodies can lead to serious infections such as sinusitis, otitis, meningitis (5). Thus, the clinician should not hesitate to perform an endoscopic nasal examination under general anesthesia in case of clinical suspicion. Removing the foreign body as soon as possible will prevent rhinoliths development since the presence of a foreign body can lead to the accumulation of calcium and magnesium salts, and the subsequent formation of rhinoliths by causing chronic inflammation if it remains in the nasal cavity for a prolonged period. Rhinolith development is more commonly seen in objects with an irregular shape and a rough surface (9). The most common complication in our patients was epistaxis, and bleedings were controlled without the need for nasal packing. It is more common with hard and irregular edged bodies. Nasal septum perforation was observed in a patient with alkaline batteries. Necrosis occurs after contact with a chemical substance, such as a battery, in the septal mucosa. Septal perforation, intranasal adhesions, and external nasal deformities may occur (10, 11). Therefore, if chemical containing foreign bodies such as batteries are inserted into the nasal cavity, they should be extracted without delay. Nasal douche and moisturizers should be used to prevent damage to the nasal mucosa. We also started the nasal douche and antibiotics in 6 of our patients with alkaline batteries. We did not find any further complications during the follow-up period of these patients.

Conclusion

Nasal foreign bodies are common in ENT practice and usually seen in young children. Most common clinical symptoms are nasal obstruction, unilateral purulent nasal discharge, epistaxis and foul odor. If the diagnosis is delayed, we may encounter complications such as sinusitis, otitis media, rhinolith formation, periorbital cellulitis, meningitis. Each patient should be treated individually by selecting an appropriate intervention method in consideration of their cooperation, the properties of the foreign body and the resulting symptoms.

Ethics Committee Approval: Ethics committee approval was received for this study from the local Ethics Committee of University of Health Sciences, Kayseri Training and Research Hospital (Approval Date: 20 March 2018; No: 52332816/13)

Informed Consent: Informed consent was not received due to the retrospective nature of the study.

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