AN UNUSUAL CAUSE FOR NASAL OBSTRUCTION:
RHINOLITHIASIS

NADİR GÖRÜLEN BİR NAZAL OBSTRÜKSİYON SEBEBI: RİNOLİTİAİZİS

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CASE REPORT

ABSTRACT

Rhinoliths are often caused by foreign objects which are put into the nose previously. During the intervening time, these objects are calcified. Most common symptoms are nasal obstruction, purulent discharge, bad smell and facial pain. If the careful examination of the patients are not performed; and rhinoliths are not kept in mind, they may be overlooked for a long time. Paranasal sinus computed tomography and endoscopic examination should be recommended for diagnosis. In this article, three cases of rhinoliths are discussed with detailed literature survey.

Key words: Rhinolithiasis, computed tomography, nasal obstruction, purulent discharge

INTRODUCTION

Rhinoliths are calcareous concretions that precipitate on an intranasal foreign body. Any material in the nose can act as a potential nidus for the deposition of salts. The crusted nidus can be either exogenous or endogenous, with the latter being more common. It was reported that more than 600 cases had been reported in the literature since the first description of the pathology by Bartholin in 1654 (1-3). Foreign bodies are often seen in children; they were seen more common in females, and they have been reported in every ages (3). They settled onto the turbinates after the children inserted the foreign bodies into the nose; and to the nasopharynx by vomiting and sneezing (4).

Rhinoliths are uncommon mineralized masses that form as a result of calcification of an endogenous or exogenous nidus. The most common manifestations of rhinolithiasis are unilateral nasal discharge, nasal obstruction, and facial pain. The diagnosis is made by nasal endoscopy and computed tomography. The differential diagnosis includes chronic inflammation, osteomyelitis, benign tumors (e.g., calcified nasal polyps, ossifying fibromas, osteomas, and chondromas), and malignant tumors (e.g., osteosarcomas, chondrosarcomas, and squamous cell carcinomas). Rhinoliths may cause rhinosinusitis, erosion of the nasal septum and medial wall of the maxillary sinus, and perforations of the palate (5).

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Endogenous or exogenous foreign bodies act as a nidus for crusting. Dried blood clots, ectopic tooth and bone fragments are examples of endogenous reasons. Examples of exogenous materials are fruit seeds, plant parts, beads and cotton wool (6).

Foreign bodies can be detected easily by the help of their high radiodensities. However, to detect the localization of low density foreign bodies, Computed tomography (CT) may be more helpful (7). In this article, three cases of rhinolithiasis is reported with Ear Nose Throat (ENT) examination and CT results.

CASE REPORTS

Patients in Case 1 and 2 gave signed informed consent for using all their results, data, CT Scans and endoscopic views. The same signed consent was taken from the parents of Case 3.

Case 1

Twenty-three years old male patient attended to Gaziantep State Hospital with complaints of left facial pain, nasal congestion and discharge, started 2 years ago. In patient's previous history, except his falling on his nose, there was no prominent features. The patient was given treatment for sinusitis in previously

ENT examination revealed a mass blocking left nasal passage and abundant purulent drainage. Nasal septum was deviated to the right. Endoscopic examination showed a mass in the purulent drainage, blocking nasal passage. It was hard as a stone. Coronal paranasal sinus CT demonstrated obstructing high-density mass on the left nasal cavity which pushed the nasal septum to the right (Figures 1-A).

Figure 1A- Coronal CT scans shows the densely calcified well defined mass in the left nasal cavity. Note that the mass bows the nasal septum to the right; and there is abundant purulent material around the mass.

To increase the view, at first septoplasty was performed; and then, approximately 15x15 mm, brown coloured, hard foreign body on the left nasal passage was removed by endoscopy guided (Figure 1-B). In control visit, 6 months after the operation, the patient's complaints were resolved and nasal cavity was found as completely normal.

Figure 1B- Approximately 15x15 mm, brown coloured, hard foreign body removed from the left nasal passage by endoscopy.

Case 2

Twenty-four years old female patient attended to Gaziantep State Hospital with complaints of nasal congestion and discharge for 6 months. In patient's previous history, there was no prominent features. The patient was given treatment for sinusitis in previously

ENT examination revealed a mass blocking left nasal passage and abundant purulent drainage. The purulent drainage was aspirated and the mass was seen. It was hard in some parts; and soft in some parts. Endoscopic examination showed a mass blocking left nasal passage. Coronal paranasal sinus CT demonstrated obstructing high-density mass on the left nasal cavity. Septum was deviated to the left slightly (Figure 2-A).

Approximately 30x20 mm foreign body, yellow-brown coloured and hard on outer surface; green co-
Goured and viscous at the inside, was removed by endoscopy and then, septoplasty was performed (Figure 2-B, 2-C). Pathological examination revealed crystalloid material, bacterial colonization and calcification. In control visit, 6 months after the operation, the patient’s complaints were resolved and nasal cavity was found as completely normal.

**Case 3**

Nine years old boy attended to Gaziantep State Hospital with complaints of left nasal discharge and bad smell for 2 years. In patient’s previous history, there was no prominent features.

ENT examination revealed abundant purulent drainage on left nasal passage. After aspiration of purulent drainage, a stone-like hard mass was seen. Endoscopic examination showed a mass in left nasal passage. Coronal paranasal sinus CT demonstrated 10 x 20 mm high-density mass on the left nasal cavity, extending from inferior turbinate level to the choana. Septum was deviated to the right (Figure 3-A).

Approximately 10x20 mm foreign body, yellow-brown coloured and hard on outer surface, green co-

**DISCUSSION**

Rhinolits are defined according to the localization. maxillary antrum localized ones are called as maxillary anthrolithes; and nasal cavity localized ones are called as rhinolits (4). They were typically settled to the base of the nasal cavity, to the midpoint of the distance between anterior and posterior naresses, between maxillary sinus wall and inferior turbinate, or between inferior turbinate and septum. Their size grow slowly with the duration. Rhinolits are more common in women. As well as they were more often seen in the third decade, they were reported between 6 months to 82 years (3).
The exact pathogenesis of rhinoliths is not yet completely understood (8-10). It is thought that a foreign body incites a chronic inflammatory reaction with deposition of mineral salts. In addition to this, other factors are thought to contribute to the formation of a rhinolith, including obstruction and stagnation of nasal secretions, acute and chronic inflammation, deposition of calcium and magnesium salts, and enzymatic activities of bacterial pathogens (8,9). Occurrence and development take long years (2). Mucus in the sinuses have a role to prevent salts’ concentration and settling as calcium salts. However, inflammation starting in the sinuses damage ciliary transport and mucus barrier. Secretions were not transported, mineral content change, and calcium accumulated around the core (7).

Most patients suffer from purulent discharge and/or congestion on the same side. Other symptoms are halitosis, epistaxis, sinusitis, headache, and in rare cases, epiphora. Rinolithes are casually detected in some cases. Therefore, examination should include anterior rhinoscopy and endoscopy. Paranasal sinus CT provides a complete accuracy for identification the location and size of the rhinoliths; and also and additional sinus pathologies requiring treatment (8). Sinusitis attacks are relatively infrequent. In the case of palliative treatment, it is ultimately suppressed, leading delayed diagnosis (4).

For our cases, the patients were given treatment for sinusitis in Case 1 and 2 previously. Because they were not examined detailedy, the diagnosis of rhinolithiasis were delayed for a long time. In our 3rd case, by conventional X-ray, foreign body were not detected due to abundant purulent drainage; and then, paranasal sinus CT showed high density foreign body. We recommend detailed ENT examination for suspicious patients with unilateral nasal congestion, nasal discharge and bad smell. If there are abundant purulent drainage, it should be cleaned at first, and all nasal cavity should be examined by anterior rhinoscopy and then rigid and/or flexible endoscopy. Convantional X-rays may be helpful, but especially paranasal sinus CT should be performed for definitive diagnosis.

For treatment, besides surgical intervention and removal of foreign body by endoscopy, the patient should be given medical treatment to relief of infection and congestion (1). To removal of rhinoliths, local anestesia may be enough for most cases; but wider surgical interventions should be necessary in cases with septal or antral perforations (4). Large rhinoliths may be removed by breaking into small pieces. If there is problem to reach the foreign body, septoplasty and/or bone-turbinoplasty may help to increase the view and to easy removal. Washing and aspiration may help the excision of small pieces (1). In our 1st case, foreign body pushed the septum and middle turbinate as if creating the cavity. Because of that, septoplasty was performed first, and then rhinolith could have been removed. In the 2nd and 3rd cases, rhinoliths could have been removed easily due to softer structure.

As a result, we recommend that rhinoliths should be kept in mind for patients with unilateral nasal discharge, congestion and bad smell, especially in children and the patients with mental problems at any ages. Additionally, ENT examination should be performed detailedy. Not only nasal cavity, but also nasoparyngeal examination should be examined thoroughly by direct examination and by endoscopic examination. Paranasal sinus BT should be accepted as gold standard for detecting the rhinoliths.

REFERENCES