Clinical Case Report

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Osteoma with actinomycosis in a nasal cavity

A case report

Jong Seung Kim, MD, PhD[a,b], Sang Jae Noh, MD, PhD[b,c,*], Soon Ho Ryu, MD[d]

Abstract

Rationale: Osteoma with actinomycosis is a very rare disease in the nasal cavity.

Patient concerns: We report a case of a 17-year-old female student who presented with nasal obstruction and rhinorrhea for 6 months.

Diagnoses: The preoperative finding was osteoma covered with yellowish polypoid material.

Interventions: We performed endoscopic sinus surgery, which included excision of the tumor and medication with oral penicillin for 8 weeks.

Outcomes: Postoperative recovery was uneventful. There was no evidence of tumor recurrence during the 1-year period after surgery.

Conclusion: Anaerobic conditions as a result of allergic rhinitis and narrowed nasal cavity because of osteoma can be the cause of formation of actinomycosis. Clinicians should note that osteoma with actinomycosis can be treated with surgical removal of the tumor and short-term antibiotic therapy.

Abbreviation: CT = computed tomography.

Keywords: actinomycosis, nasal cavity, osteoma, paranasal sinuses

1. Introduction

Actinomycosis is a common disease in the oral cavity. Actinomyces is a species of bacteria that normally exists in the oral cavity, intestines and vagina. It is a Gram-positive, anaerobic bacteria, and propagates in an anaerobic environment; it acts as a pathogen as a result of trauma.[1] Diabetes mellitus, long-term use of steroids, nutritional deficiency or an immunosuppressed state are known to be related to actinomycosis.[1] However, in immunocompetent patients, it is very rarely found in the nasal cavity, especially in cases with osteoma. We report a rare case of actinomycosis associated with intranasal septal osteoma in a 17-year-old female patient. This study was approved by the institutional review board of Chonbuk National University Hospital. Informed consent was given by the patient.

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[a] Department of Otolaryngology-Head and Neck Surgery, Chonbuk National University, [b] Research Institute of Clinical Medicine of Chonbuk National University—Biomedical Research Institute of Chonbuk National University Hospital, [c] Department of Forensic Science, College of Medicine, Chonbuk National University, Jeonju, [d] Plus I Mi Ko clinic, Suncheon, Chonnam, Korea.

[*] Correspondence: Sang Jae Noh, Department of Forensic Medicine, Chonbuk National University Medical School, 567 Baekje-daero, Deokjin-gu, Jeonju-si, Jeollabuk-do 54896, Korea (e-mail: sjnoh@jbnu.ac.kr).

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2. Case report

A 17-year-old female student presented with nasal obstruction and rhinorrhea for 6 months. She was otherwise previously healthy and denied any history of trauma. She had a history of allergic rhinitis since childhood.

Nasal endoscopy showed a whitish solid mass occupying the right nasal cavity (Fig. 1). The solid mass with smooth margins was well encapsulated and adjacent to the inferior turbinate posteriorly. Yellowish polypoid material was present on the posterior surface of the mass adjacent to the inferior turbinate (red arrow). The origin of the mass was the anterior nasal septum (blue arrow). Other physical examinations included the oral cavity and larynx, and they were normal. Laboratory tests were also normal. Computed tomography (CT) revealed a 0.5×1 cm lesion of osseous density arising from the right nasal septum. The yellowish material was seen to have soft tissue density on the CT image (Fig. 2).

The lesion was completely removed endoscopically under general anesthesia. The mass was well circumscribed and had a single pedicle attached to the right nasal septum. The specimen was 1×2 cm, with a whitish cut surface. After cutting the pedicle, the bulky lesion was removed without any difficulty. There was a normal middle turbinate and uncinated process in the right nasal cavity. No significant intraoperative bleeding was noted. Permanent pathologic examination revealed osteoma with actinomycosis (Fig. 3).

The patient was prescribed oral penicillin for 8 weeks. Postoperative recovery was uneventful and there was no evidence of tumor recurrence during the 1-year period after surgery.

3. Discussion

Osteoma is the most common benign tumor of the paranasal sinus, usually occurring in the frontal sinus; however, it is very rare in the nasal cavity.[2] To our knowledge, 4 cases of osteoma

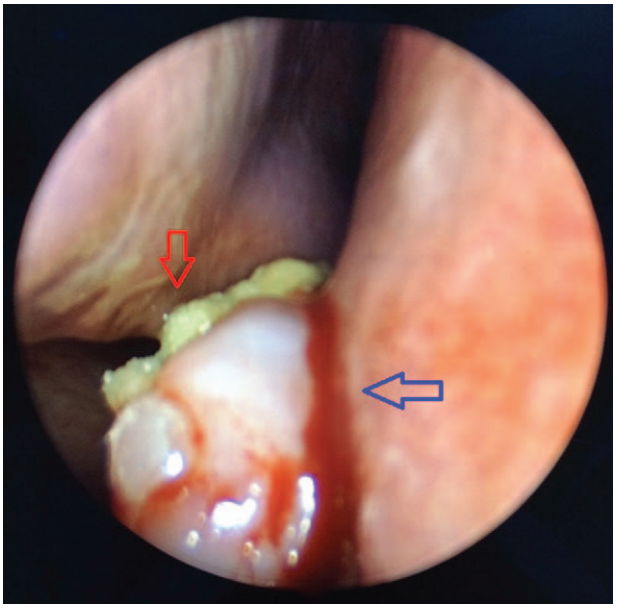

Figure 1. Endoscopy of the right nasal cavity revealed a whitish mass attached to the right nasal septum (blue arrow) and yellowish material on the posterior surface of the mass adjacent to the inferior turbinate (red arrow).

have been reported in the inferior turbinate, 8 cases in the middle turbinate, and 1 case in the superior turbinate.[3–11] In addition to the turbinates, nasal osteoma may originate in the nasal septum.[2] To our knowledge, this is the first report of nasal septal osteoma in the English literature.

Although nasal osteoma is rare, it can be easily differentiated endoscopically from other tumors due to its typical nature. During insertion of the endoscope, most rhinologists usually put the suction tip inside it simultaneously. When the clinician touches the tumor with the suction tip, the osteoma is usually very stiff under palpation. During physical examination, this observation is highly suggestive of nasal osteoma.

Actinomycosis of the sinonasal area is also extremely rare. The most common organism is *Actinomyces israelii* and it is present in the sinus, nasopharynx, and nasal cavity.[1] It is an anaerobic Gram-positive bacteria and a normal saprophytic organism in the mouth, colon, and vagina.[12] Clinical manifestations of actinomycosis are divided into 3 forms: cervicofacial, thoracic, and abdominopelvic.[13] It can occur both in immunocompromised patients and in immunocompetent patients with a history of trauma.[1,13]

To our knowledge, this is the first report of both osteoma and actinomycosis in a nasal cavity. The initiation of these 2 conditions is interesting. Although our patient had no history of trauma, allergic rhinitism and hypoventilation due to osteoma accelerated the development of the actinomycosis. The environment with allergic rhinitis and a narrowed nasal cavity caused by the septal osteoma-induced anaerobic conditions. Moreover, the narrowed nasal cavity and edematous swelling due to allergic rhinitis resulted in frequent contact with the inferior turbinate. These factors could initiate the occurrence of actinomycosis.

The fundamental treatment of osteoma and actinomycosis is by surgical removal. Unlike osteoma, which is only completely removed by surgical treatment, actinomycosis requires additional antibiotic therapy. In the literature, treatment of actinomycosis is by long-term antibiotics.[1] Our patient was treated with total

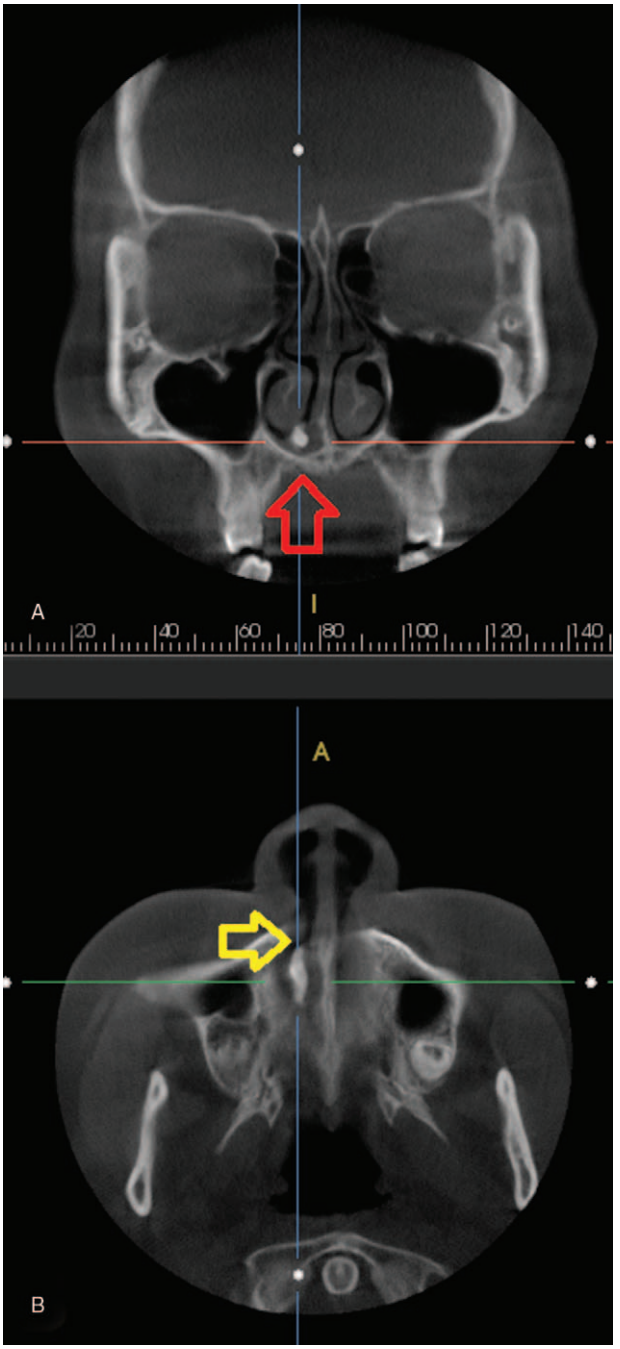

Figure 2. Computed tomography of the osteoma with actinomycosis in the nasal cavity. (A) Coronal view of the right nasal cavity showing an approximately 0.5 × 0.5 cm ossified mass in the right nasal cavity (red arrow). Note the soft tissue density adjacent to the right inferior turbinate. (B) Axial view of the right nasal cavity showing an approximately 0.5 × 1 cm ossified mass in the right nasal cavity (yellow arrow). There is no bone destruction or invasion.

surgical removal of the osteoma and actinomycotic tissue, and the subsequent 2 months of oral penicillin was sufficient to eliminate any recurrence. Long-term antibiotic treatment does not seem to be necessary for elimination of actinomycosis.

4. Conclusions

Sinonasal osteoma with actinomycosis is extremely rare. The osteoma is usually diagnosed with endoscopy and CT. However,

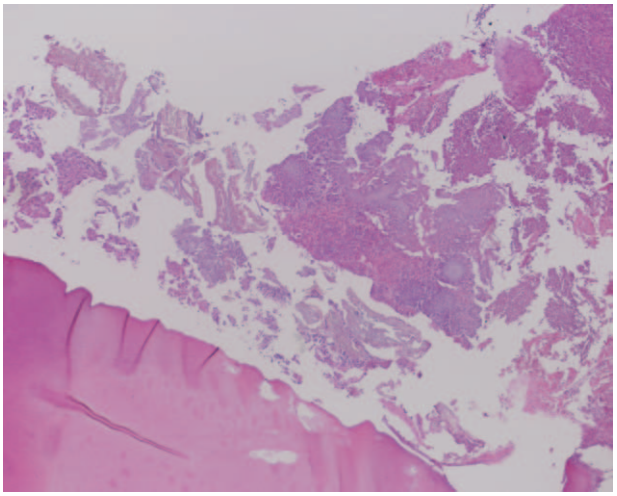

Figure 3. Histopathologic findings for the osteoma. Hematoxylin and eosin (H&E) staining of osteoma and actinomycosis. Large colonies of Actinomyces can appear macroscopically as yellow granules, which have been termed "sulfur granules" and which have a darkly eosinophilic rim in the periphery of the colony using H&E stain. Dense and lamellar cortical bone with a focal area of woven bone shows the characteristics of osteoma.

when inserting the endoscope and suction tip, care should be taken not to suction out other materials, which can be actinomycotic. Actinomycosis needs additional antibiotic therapy to prevent recurrence.

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