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CASE REPORT

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Actinomycosis of the middle turbinate

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Abstract

Actinomycosis is an uncommon bacterial disease caused by actinomyces. Cervicofacial infection accounts for more than 60% of all cases. However, nasal and paranasal sinus involvement has rarely been described. We report herein a case of a patient presenting with middle turbinate actinomycosis.

KEYWORDS

actinomycosis, middle turbinate

1 | INTRODUCTION

Actinomycosis is an uncommon bacterial disease caused by Actinomyces, gram-positive anaerobes. Most cases are odontogenic and predominantly occur in immunocompetent individuals.[1] Four major clinical forms of actinomycosis exist in humans: cervicofacial, thoracic, abdominopelvic, and central nervous system (CNS).[2] Cervicofacial infection accounts for more than 60% of all cases.[1] However, nose and paranasal sinus involvement has rarely been reported.[3–10] We describe herein a case report of a patient presenting with middle turbinate actinomycosis. It is the second case reported in the literature.

2 | CASE REPORT

A 55-year-old female patient was referred to our outpatient clinic for a 3-month history of a left nasal obstruction concomitant with purulent nasal discharge and facial algia nonresponding to many courses of oral antibiotics. Her medical history included diabetes mellitus. The patient did not relate any dental history nor facial trauma history. The endoscopic examination revealed a purulent rhinorrhoea and a hypertrophic middle turbinate with granulomatous mucosa, filling the nasal cavity and repressing the septum. Oral cavity examination did not reveal any dental abnormality. Computed tomography scan of the paranasal sinuses showed a heterogeneous lesion of the left Middle turbinate focally hyperdense filling the nasal cavity and repressing the septum. Ipsilateral maxillary, ethmoid, and frontal sinuses were entirely filled. No sinus wall erosion was noted (Figure 1). Fungal sinusitis was suspected. Our patient underwent a functional endoscopic sinus surgery consisting of a left middle turbinoplasty, a left middle meatotomy, and a left functional endoscopic ethmoidectomy. A sphenoidotomy was also performed since the lesion was intraoperatively extensive to the sphenoid ostium. However, the presence of white lumps, intraoperatively, was in favor of actinomycosis (Figure 2). Histopathology confirmed indeed the latter diagnosis given the presence of actinomycetes (Figure 3). Thus, the patient received a 4-week-oral amoxicillin-clavulanic acid cure (80 mg/kg/day). The clinic and endoscopic 6-month follow-up did not reveal any sign of relapse.

3 | DISCUSSION

More than half of the reported cases of actinomycosis have a cervicofacial localization. However, nasal and paranasal sinus involvement has rarely been described.[11] Only one

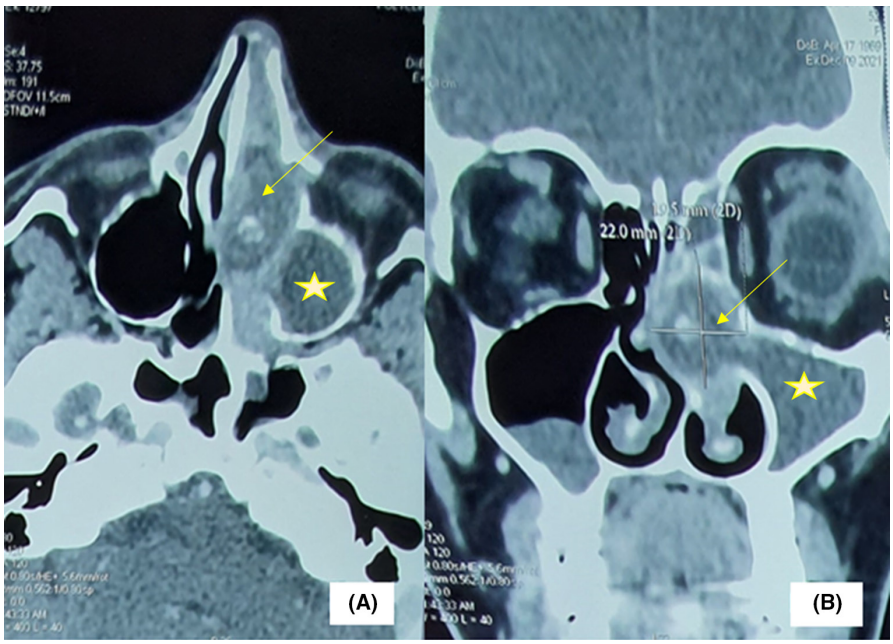

FIGURE 1 Axial (A) and coronal (B) paranasal sinus computed tomography scan showing a heterogeneous left-sided nasal mass attached to the medial turbinate (arrow) with an ipsilateral maxillary and ethmoid sinuses opacities (stars)

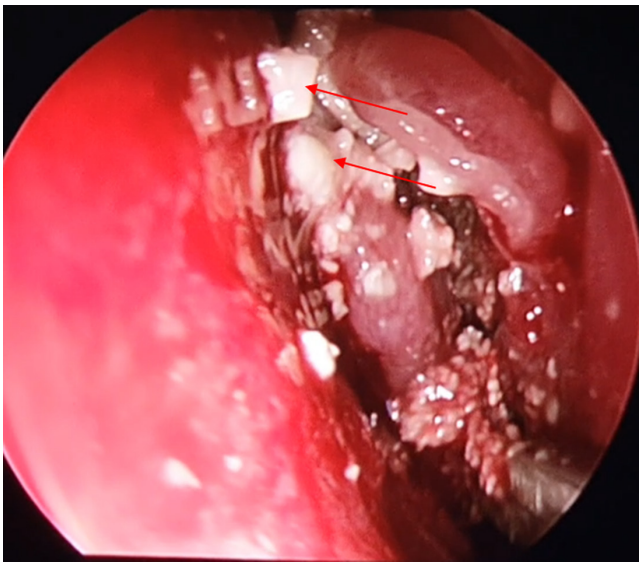

FIGURE 2 Intraoperative endoscopic imaging showing characteristic white lumps (red arrows)

case of middle turbinate actinomycosis was reported in the English literature.[12]

Although the term actinomyces has a Greek origin meaning "ray fungus," actinomycosis is a chronic bacterial granulomatous infection caused by gram-positive, anaerobic to microaerophilic bacteria that are not acid-fast.

Actinomyces israelii is the most common human pathogen of actinomycosis that inhabits oral and buccal cavities; it is considered to be an endogenous commensal organism.[13] Hence, the loss of mucosal integrity by direct trauma, tooth extraction, root canal therapy, periodontal or periapical lesions are incriminated in the onset of the disease.[11,14] However, our patient did not have any dental history and buccal examination did not reveal any abnormalities.

Patients usually present with non-specific unilateral nasal symptoms consistent with chronic sinusitis, such as purulent nasal discharge, nasal obstruction, foul odor, and sinusalgia.[15,16]

Paranasal sinuses computed tomography imaging does not permit a specific diagnosis. It shows opacities in the paranasal sinus, focal calcified lesions, and/or focal areas of bone destruction. However, it allows a more accurate definition of the dimensions and extension of the infection.[1] Given the imaging findings, many other differentials may be evoked as has been mentioned in our case report. Nasal and paranasal actinomycosis has to be differentiated from nocardiosis, fungal sinusitis, and neoplasms.[9]

Positive bacterial culture confirms the diagnosis. However, its low rate of isolation makes it difficult. No bacterial examination was carried out for our patient.

Histologic examination reveals the characteristic sulfuric granules in 30% of cases. They are described as tiny, yellow-white, lobulated, grainy microcolonies with club-shaped filaments, measuring 1–5 μm in diameter and radiating in a rosette pattern, surrounded by inflammatory cells. Our patient histologic findings were consistent (Figure 3). However, sulfuric granules are not pathognomonic since they have also been described in nocardiosis and botryomycosis.[9,12]

As for the therapeutic recommendations, both surgical and medical treatments should be combined. Vascular supply decreases in actinomycosis-infected tissues, making the penetration of antibiotics to the lesion difficult.

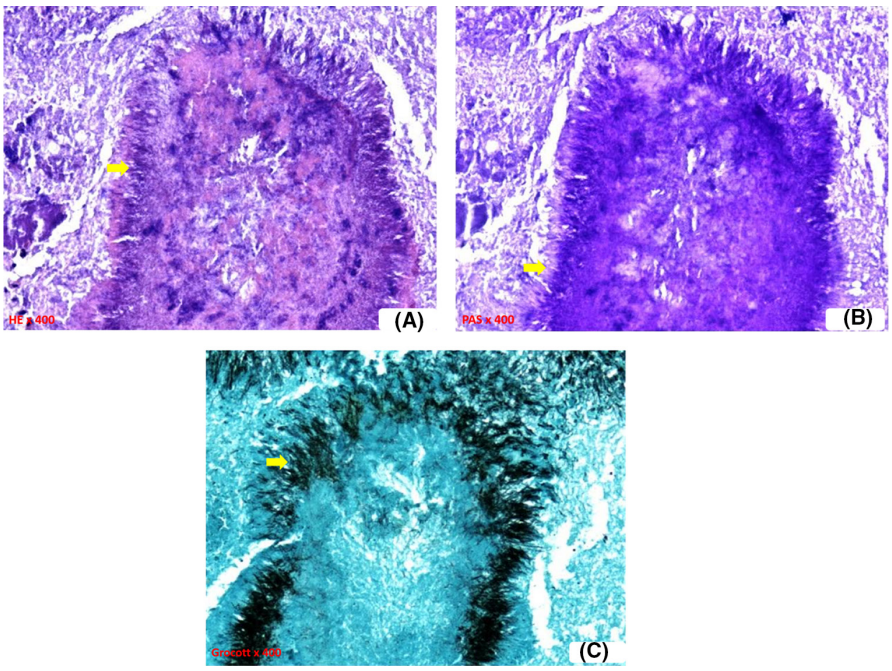

FIGURE 3 Branching filaments (arrows) with peripheral fibrinous and leukocytic exudate adjacent to suppurative infiltrates after Hematoxylin and eosin (A), Periodic acid–Schiff (B) and Grocott staining (C), respectively

Therefore, the lesion should be surgically removed and the surrounding tissues thoroughly debrided.[13,17] Then, surgery should be followed by a long-term-penicillin therapy; Penicillin G (50–75 mg/kg/day intravenously in four daily divided doses) for 4–6 weeks followed by peroral penicillin V (30–60 mg/kg/day administered in four divided doses) for 2–12 months.[1]

If the patient is known allergic to penicillin, tetracycline, clindamycin, cephalosporin, or erythromycin may be prescribed.[10,12,13]

Fluoroquinolones, aztreonam, fosfomycin, and other aminoglycosides are known to have poor activity against Actinomyces species.[2,18]

However, no consensus has been reached on the antibiotic therapy duration. It has been established that patients with cervicofacial actinomycosis have a favorable prognosis since some occasional cures with aggressive surgery alone have been reported in the pre-antibiotic era.[19]

The duration of the antibiotic therapy should be individualized based on the site of the infection, the clinical and the radiologic response to the treatment and its severity. Short courses-regimen consisting of 2–6 weeks of oral antibiotic therapy (± intravenous) associated with surgical debridement have been reported to be curative in recent studies.[7,10,19] A thorough and prolonged follow-up is required to watch for recurrence which might happen after several years.[16]

As for our patient, endoscopic surgical treatment was followed by a 4-week oral antibiotherapy (80 mg/kg/day of oral amoxicillin-clavulanic acid). No signs of relapse were detected during her 6-month follow-up care.

4 | CONCLUSION

Nasal and paranasal actinomycosis is a rare bacterial disease mimicking fungal and neoplastic pathologies. Its diagnosis is microbiological and/or histologic. The treatment is based on endoscopic surgery and antibiotics.

However, more studies are needed to standardize the minimum required duration of antibiotic therapy.

AUTHOR CONTRIBUTIONS

Malek Mnejja, Walid Bouayed, Imen Achour, and Rachid Jlidi involved in patient care, data and information collection, manuscript preparation, and manuscript review. Asma Abbes and Marwa Regaieg involved in manuscript preparation. Bouthaïna Hammami and Ilhem Charfeddine involved in manuscript review.

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None.

CONFLICT OF INTEREST

The authors declare no potential conflicts of interest.

DATA AVAILABILITY STATEMENT

The datasets are available from the corresponding author on reasonable request.

ETHICAL APPROVAL

No ethical conflicts to disclose.

CONSENT

Written informed consent was obtained from the patient for the publication of this case report and accompanying clinical images.

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