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Actinomycosis of the middle turbinate

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April 6, 2022

Abstract

Actinomycosis in 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 here in a case of a patient presenting with a middle turbinate actinomycosis.

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 [4-14]. We describe herein a case report of a patient presenting with a middle turbinate actinomycosis. It is the second case reported in the literature.

Case report:

A 55-year-old female was referred to our office for a three-month left nasal obstruction concomitant with purulent nasal discharge and facial algia non responding to many courses of oral antibiotics. Her medical history included diabetes mellitus. The endoscopic exam revealed a purulent rhinorrhoea and a hypertrophic middle turbinate with granulomatous mucosa, filling the nasal cavity repressing the septum. A computed tomography scan of 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 in a left middle turbinoplasty, a left middle meatotomy, a left functional endoscopic ethmoidectomy and sphenoidotomy. However, the presence of white lumps intraoperatively was in favour of actinomycosis (Figure 2). Histopathology confirmed indeed the latter diagnosis given the presence of actinomycetes (Figure 3). Thus, she received a four-week-oral amoxicillin- clavulanic acid cure (80 mg/kg/day). The clinic and endoscopic six-month follow-up did not reveal any sign of relapse.

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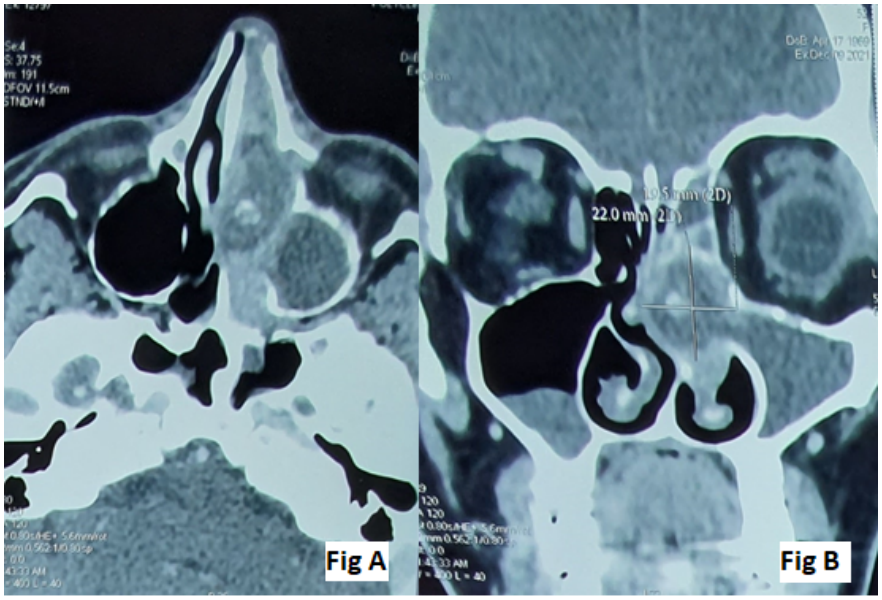

Figure 1: Axial (A) and coronal (B) PNS CT scan showing an hetergogenous left sided nasal mass attached to the medial turbiate with an ipsilateral maxillary and ethmoïd sinuses opacities

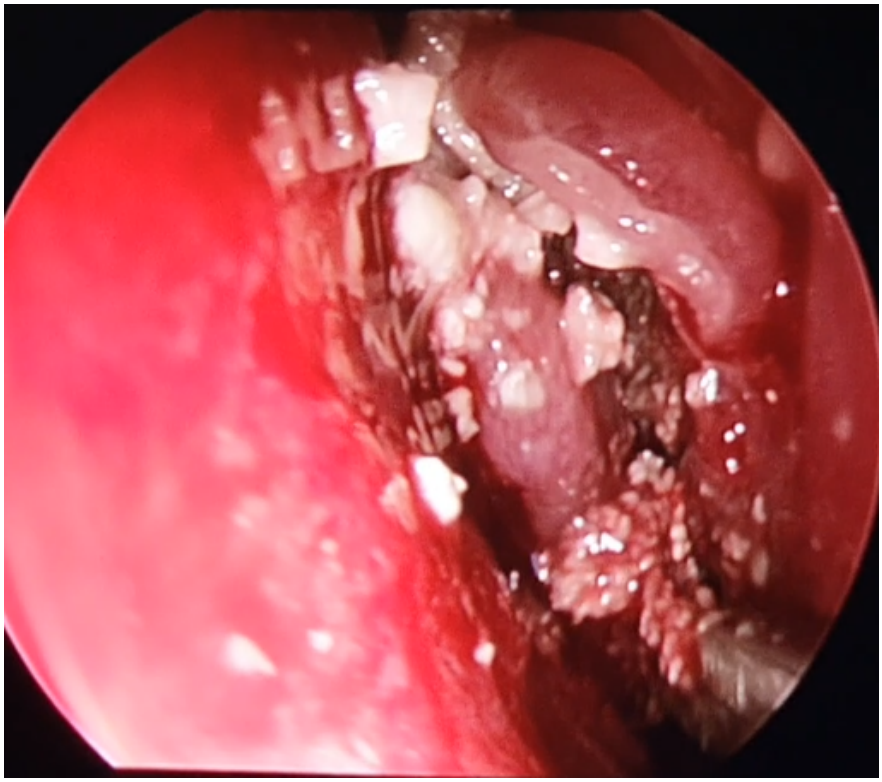

Figure 2: Intraoperative endoscopic imaging showing characteristic white lumps

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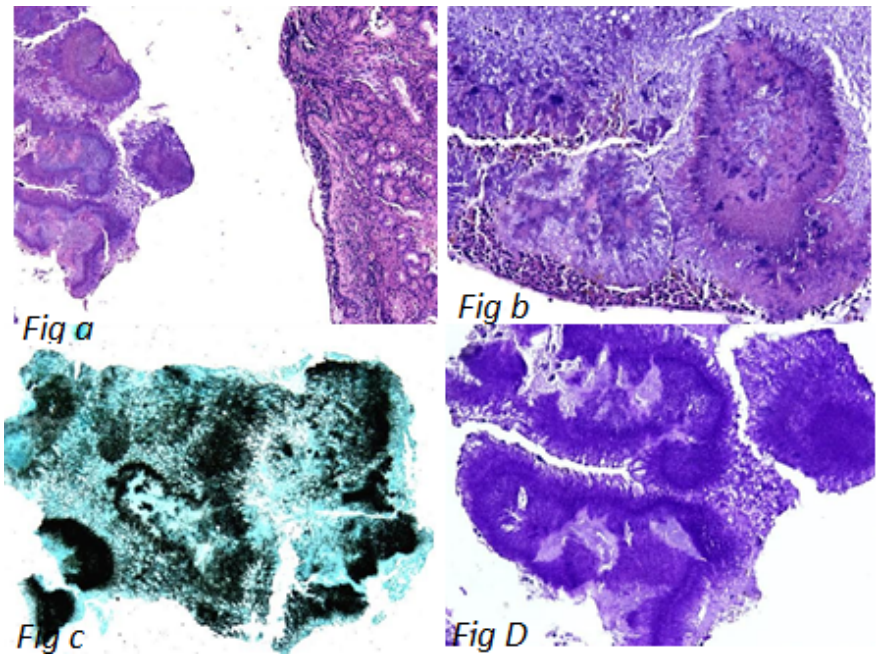

Figure 3: (a) Sulfur granules of actinomycosis and inflammatory nasal mucosa (H& E stain *200) ; (b,c , d) Branching filaments with peripheral fibrinous and leukocytic exudate adjacent to suppurative infiltrates after H&E, PAS and Grocott staining, respectively .

Discussion:

More than half of the reported cases of actinomycosis have a cervicofacial localisation. However, nasal and paranasal sinus involvement has rarely been described (3,4,13,5–12) Only one case of middle turbinate actinomycosis was reported in the English literature (5).

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 and is considered to be endogenous commensal organism.(14)Hence, the loss of mucosal integrity by direct trauma, tooth extraction, root canal therapy, periodontal or periapical lesions is incriminated in the onset of the disease(15). However, our patient did not have any dental history. Her 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 odour, sinusalgia (16)(13)

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 more accurate definition of the dimensions and extension of the infection.(1) Given the imaging findings, many other differentials may be evoked as it has been mentioned in our case report; nasal and paranasal actinomycosis has to be differentiated from nocardiosis, fungal sinusitis, and neoplasms.(12)

Positive bacterial culture confirms the diagnosis. However its low rate of isolation makes it difficult. We did not carry out bacterial testing for our patient.

Histologic exam reveals the characteristic sulfur 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

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and radiating in a rosette pattern, surrounded by inflammatory cells. Our patient histologic findings were consistent with these constatations (figure 3). However, sulfur granules are not pathognomonic since they have also been described in nocardiosis and botryomycosis. (5,12)

As for the therapeutic recommendations, both surgical and medical treatments should be combined. In fact, vascular supply decreases in actynomycosis-infected tissues making difficult the penetration of antibiotics to the lesion. Therefore, the lesion should be surgically removed and the surrounding tissues thoroughly debrided.(14,17) 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 to 6 weeks followed by peroral penicillin V (30–60 mg/kg/day administered in four divided doses) for 2 to 12 months(1) .

If the patient is known allergic to penicillin, tetracycline, clyndamycine, cephalosporin or erythromycin may be prescribed(5,14)

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 favourable prognosis since some occasional cures with aggressive surgery alone has been reported in the preantibiotic 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 to 6 weeks of oral antibiotic therapy (+/- intravenous)associated with surgical debridement have been reported to be curative in recent studies.(19) A thorough and prolonged follow-up is required in order to watch for recurrence which might happen after several years (13)

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

Conclusion:

Nasal and paranasal actinomycosis is a rare bacterial disease mimicking fungal and neoplastic pathologies. Its diagnosis is microbiological and/ or histologic. Endoscopic surgery, combined with antibiotics, allows the infection to be cured.

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

Author Contributions :

- Malek Mnejja, Walid Bouayed, Imen Achour, Rachid Jlidi : Involved in patient care, data and information collection, manuscript preparation, and manuscript review.

- Asma Abbes, Marwa Regaieg: Involved in manuscript preparation

- Bouthaïna Hammami, Ilhem Charfeddine : Involved in manuscript review

Funding Statement : None

Ethical Approval : No ethical conflicts to disclose

Conflicts of Interest : The authors declare no potential conflicts of interest

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

Data availability statement: The datasets are available from the corresponding author on reasonable request.

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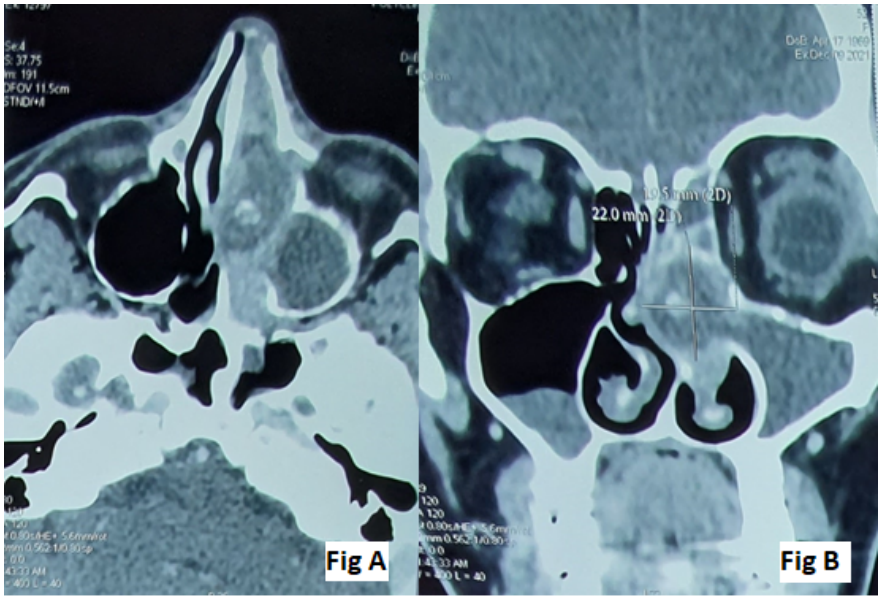

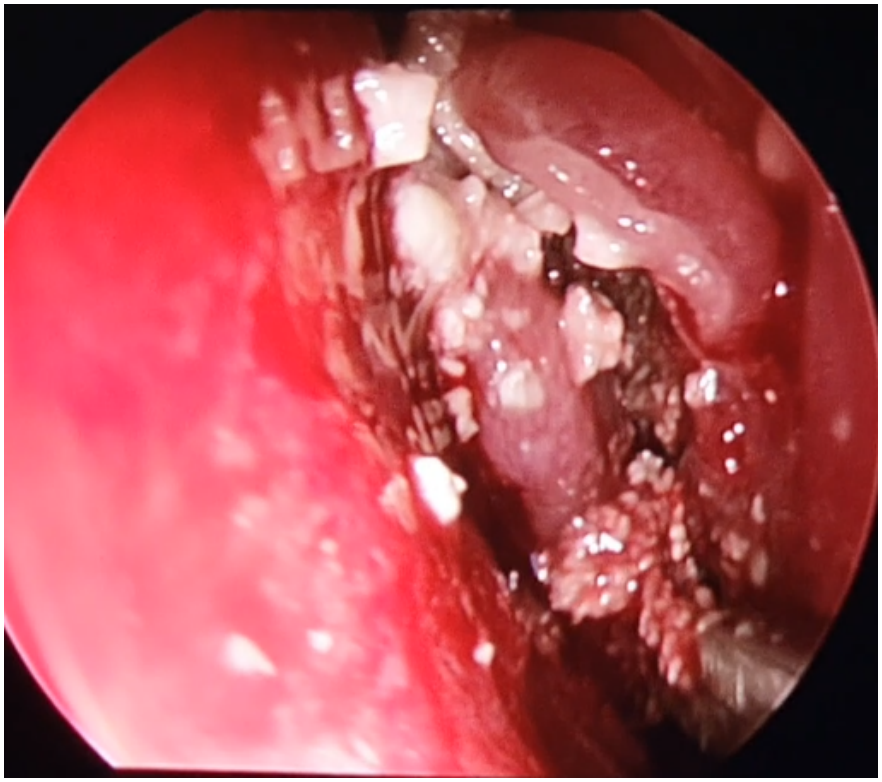

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