SEPTAL ABSCESS REVEALING UNDERLYING MUCORMYCOSIS

ABCÈS SEPTAL RÉVÉLANT UNE MUCORMYCOSE SOUS-JACENTE

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ABSTRACT

Introduction: Septal mucormycosis is a rare presentation of rhino-orbito-cerebral mucormycosis. We present an unusual presentation of mucormycosis revealed by a septal abscess, highlighting its clinical, therapeutic, and prognostic features.
Case Report: We report a case of acute headache and nasal obstruction, with endoscopic examination revealing a budding lesion on the posterior and superior part of the nasal septum, with normal surrounding mucosa. Initial investigations were negative, and there was no improvement with antibiotic therapy, prompting a repeat biopsy. The diagnosis of septal mucormycosis was confirmed, and treatment with amphotericin B lead to a favourable outcome.
Discussion: An initial presentation in the form of a nasal septal abscess or septal swelling is uncommon. These atypical presentations often delay diagnosis and worsen prognosis.
Keywords: Mucormycosis, Fungal infection, Septum, Necrosis

RESUME

Introduction: La mucormycose du septum représente une localisation rare de la mucormycose rhino-orbito-cérébrale. Ce cas illustre une présentation atypique de la mucormycose révélée par un abcès septal en mettant en évidence la présentation clinique, la prise en charge thérapeutique et les modalités évolutives.
Cas clinique: Nous rapportons le cas d'un patient qui présentait des céphalées associées à une obstruction nasale avec à l'endoscopie un bombement au niveau de la partie postéro-supérieure du septum nasal sans autres lésions de la muqueuse nasale. Devant la non-amélioration sous antibiothérapie et la négativité des biopsies initiales, des biopsies ont été refaites révélant une mucormcycose. Un traitement par amphotéricine B avait été démarré avec une bonne évolution.
Discussion: La découverte de la mucormycose devant un abcès un septal ou bombement du septum nasal n'est pas commun, pouvant ainsi retarder le diagnostic compromettant ainsi le pronostic.
Mots-clés: Mucormycose, Infection fongique, septum,nécrose.

INTRODUCTION:

Mucormycosis is a rare invasive fungal infection with a high mortality rate. This infection is caused by filamentous fungi belonging to the order Mucorales. Sino-nasal mucormycosis represents 27% of mucormycosis cases worldwide [1]. The nasal septum is a rare localization of mucormycosis.

The pathogenesis of mucormycosis depends on submucosal blood vessel invasion, endothelial injury, and thrombosis, which lead to a reduction in blood flow and ultimately result in tissue necrosis. After arterial invasion, spread to adjacent vital regions such as the orbit and intracranial structures is common [2]. Pure septal necrosis may be caused by other pathologies, often with a low index of suspicion for fulminant fungal infection, which can lead to delayed diagnosis.

The aim of this article is to present an unusual presentation of sinonasal mucormycosis. In fact, an initial presentation of mucormycosis as a nasal septal abscess or septal swelling, or even as centrofacial necrosis involving the nasal pyramid, is uncommon but possible, particularly in immunocompromised patients. These atypical presentations often delay diagnosis and worsen prognosis. This feature constitutes the particularity of our case.

CASE PRESENTATION:

We report the case of a 65-year-old man with poorly controlled diabetes mellitus and a remote history of acute ethmoiditis at the age of six, who presented with

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progressive nasal obstruction evolving over 10 days, associated with increasing localized nasal pain and tenderness, without any history of nasal trauma.
Clinical examination revealed widening of the nasal pyramid with signs of external nasal inflammation. Nasal endoscopy demonstrated septal bulging involving the posterior and superior portions of the nasal septum, with no visible mucosal necrosis. Laboratory investigations showed a marked inflammatory syndrome, with a C-reactive protein level of 232 mg/L and a white blood cell count of 16,650/mm³.
Computed tomography (CT) of the paranasal sinuses revealed left-sided pansinusitis associated with a septal collection occupying the left nasal cavity, without initial orbital or intracranial extension (Figure 1).

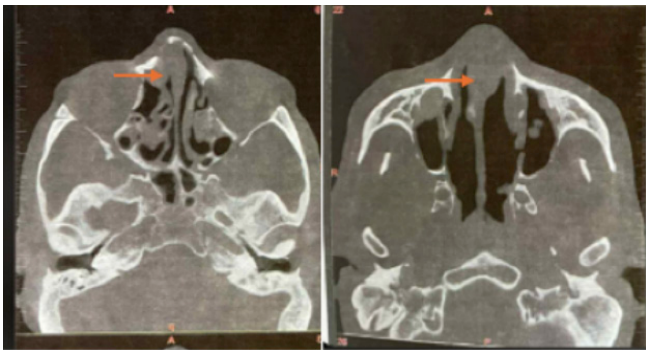

Figure 01. Axial CT images demonstrating septal thickening and bulging, with a left-sided hypodense septal collection causing marked narrowing of the adjacent nasal fossae.

Empirical broad-spectrum triple antibiotic therapy was initiated, combining cefotaxime (6 g/day), metronidazole (1.5 g/day), and vancomycin (3 g/day), administered in divided doses every 8 hours. An initial surgical drainage of the septal abcess was performed, and purulent material was sent for bacteriological and mycological analysis, which returned negative.
Despite appropriate postoperative management, the patient showed no clinical improvement, with early recurrence of septal swelling, worsening pain, persistent bulging of the left paranasal region, and the development of an inflammatory plaque at the medial canthus of the eye. Repeat CT imaging demonstrated persistence of the septal collection with lysis of the ethmoid roof (Figure 2).

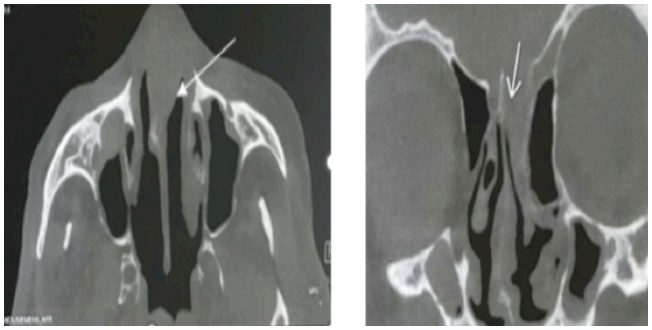

Figure 02. Axial and coronal CT scans of the facial bones showing lysis of the roof of the left ethmoid sinus associated with thickening and bulging of the nasal septum.

A second surgical exploration was therefore undertaken. Intraoperatively, a lytic appearance of the septal cartilage was observed. Lytic cartilaginous tissue was removed and submitted for histopathological and mycological examination. Histopathology revealed broad, thick-walled, non-septate branching hyphae, PAS-positive, consistent with mucormycosis. The diagnosis of rhino-nasal mucormycosis was confirmed. Due to the unavailability of liposomal amphotericin B, amphotericin B deoxycholate was initiated 15 days after hospital admission at a dose of 1 mg/kg/day, subsequently reduced to 0.7 mg/kg/day following the onset of renal impairment. The total duration of antifungal therapy was six weeks, administered intravenously. Clinical and biological monitoring was performed. During hospitalization, the patient underwent weekly nasal endoscopic examinations. Laboratory monitoring included daily serum electrolyte measurements, complete blood count, and renal function tests performed every other day.
The postoperative course was favorable, with no evidence of recurrence, over a 2-year follow-up period.

DISCUSSION:

In recent years, the incidence of mucormycosis has increased worldwide, mainly due to predisposing factors such as uncontrolled diabetes mellitus, immunosuppression, and, more recently, coronavirus disease 2019 (COVID-19) [1,2]. In Tunisia, a retrospective study published in 2023 reported an annual incidence ranging from one to three cases of mucormycosis, with sinonasal involvement being the most frequent localization [3]. Nearly three-quarters of mucormycosis cases (73.9%) were located in the rhino-sinusal region [4].
The pathogenesis of mucormycosis depends on submucosal blood vessel invasion, endothelial injury, and thrombosis, which lead to a reduction in blood flow and ultimately result in tissue necrosis. After invasion into arteries, the spread to adjacent vital regions such as the orbit and intracranial structures is common [2]. Pure septal necrosis and abscess formation rarely reveal this pathology. Septal necrosis is more frequently observed in the posterior bony portion of the nasal septum than in the anterior cartilaginous part, mainly due to involvement of the posterior septal branch of the sphenopalatine artery [5].
In its classical rhino-orbito-cerebral presentation, computed tomography (CT) and magnetic resonance imaging (MRI) typically demonstrate diffuse sinonasal inflammatory involvement, with or without bone erosion, and possible orbital or intracranial extension [6].
In contrast, when mucormycosis originates focally in the nasal septum or in the soft tissues of the nasal pyramid, radiological findings may be subtle. CT may reveal a septal collection with peripheral enhancement associated with early cartilaginous or bony destruction [5]. Additional CT findings may include reactive sinonasal opacification and fat

stranding in the premaxillary or periantral regions, although these findings are nonspecific and may also be observed in bacterial infections. MRI is superior to CT for detecting early soft-tissue infiltration, lack of enhancement suggestive of ischemic necrosis, and perineural or intracranial extension, often before overt bone destruction becomes apparent [6].

The diagnosis of mucormycosis is based on histopathological and/or mycological evidence. Tissue biopsies are the samples of choice for the diagnosis mucormycosis and should be collected in sufficient quantity, with fresh, well-preserved tissue that is representative of the infected area [2]. The tissue should be collected using sterile instruments, avoiding crushing to preserve the integrity of the hyphae, and should target the active edge of the lesion, where fungal invasion is maximal. Other specimens, such as nasal lavages, sputum, or sinus secretions, can be used but are less reliable. Biopsies should be rapidly sent to the laboratory for histopathology (formalin-fixed) and mycological culture (fresh tissue) to optimize the detection and identification of Mucorales [2].

Histopathological examination typically reveals broad, ribbon-like, non-septate or sparsely septate hyphae with right-angle branching, measuring approximately 6–25 µm in diameter [7]. Associated histological features include tissue necrosis, hemorrhage, angioinvasion, neutrophilic infiltration, and perineural invasion [7,8]. Mycological cultures may demonstrate rapidly growing cottony or fluffy colonies, with coloration varying according to the genus involved; however, cultures may remain negative despite proven histopathological infection [8,9].

Management of mucormycosis relies on a combination of aggressive surgical debridement, systemic antifungal therapy, and correction of underlying predisposing factors. Early multidisciplinary management with repeated surgical debridement is recommended to remove necrotic tissue and control disease progression [2]. According to international guidelines, liposomal amphotericin B is the first-line antifungal therapy. The recommended dose is 5 to 10 mg/kg/day administered intravenously; however, there is no consensus regarding the optimal duration of treatment, which should be individualized based on clinical response and disease extent [2,7]. Indeed, amphotericin B in its liposomal form has less nephrotoxicity and fewer infusion-related reactions than the deoxycholate form.

Biological monitoring, including a renal panel and electrolytes twice weekly, along with a complete blood count weekly, is required [10].

Prognosis depends on early diagnosis, the extent of angioinvasion, prompt initiation of antifungal therapy, adequacy and timing of surgical management, and host comorbidities [1,2,11].

CONCLUSION:

Although rare, this presentation is well documented. The reported cases share non-specific clinical and radiological features. Therefore, in any immunocompromised patient, the presence of chronic rhinological symptoms should prompt suspicion of mucormycosis.

Conflict of interest:

The are no conflict of interest.

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Consent: Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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