

FUNGAL MAXILLARY SINUSITIS (ASPERGILLOSIS) IN A GERIATRIC PATIENT WITH DIABETES AND HYPERTENSION: A CASE REPORT

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Abstract

Aim: A case of maxillary aspergillosis with unusual clinical presentation and imaging findings.

Background: The range of lesions and conditions that affect the maxillary sinus is wide and vast. This necessitates a dynamic multidisciplinary approach for proper diagnosis and effective management.

Case description: We present an unusual case of maxillary aspergillosis was most consistent with lymphoma from the diagnostic imaging perspective. Histopathology and radiographically however, established the correct diagnosis; appropriate management commenced promptly.

Conclusion: It is imperative that maxillary aspergillosis be diagnosed and managed properly and promptly to improve prognosis. Advanced imaging is required, but it plays an adjunct role to histopathology. Long-term follow-up is also necessary to ensure complete resolution of the infection

Clinical significance: It is essential to correlate clinical and imaging results, and any discrepancies should be fixed right away to avoid postponing appropriate treatment. Histopathology frequently helps to establish a correct diagnosis and disputes any discrepancies.

Introduction

First described by Katzenstein et al. in 1983, Aspergillus sinusitis is an infectious illness that currently poses difficulties for diagnosis, treatment, classification.

The nasal cavity and paranasal sinuses are the first organs impacted by aspergillosis in the head and neck area.

Although there are more than 185 Aspergillus species, approximately 95% of infections are caused by Aspergillus fumigatus, Aspergillus flavus, and Aspergillus niger . Nasal polyps, nasal blockage, headache, proptosis, anosmia, anterior and posterior nasal discharge, and snoring are the symptoms . Pathogens in the Aspergillus genus lack keratolytic enzymes, which prevents them from aggressively penetrating intact skin or mucous membranes.(3)

The most prevalent form of aspergillosis is called aspergilloma, which is characterized by noninvasive chronic fungal sinusitis and

is primarily observed in immunocompetent hosts.(4)

Aspergilloma is typically asymptomatic, and symptoms may not show up for years. It typically affects a unilateral sinus cavity. On radiographic examination, it resembles a foreign body in a homogeneously clouded maxillary sinus.(5)

Based on the mucosal and extra-mucosal involvement, aspergillosis has four characteristics. There are two saprophytic and two infectious. Both invasive and chronic indolent fulminant sinusitis are contagious. Aspergilloma and allergic aspergillus sinusitis are the saprophytic types. Aspergillosis was divided into three main categories by Rowe Jones in 1994: invasive, non-invasive, and non-invasive destructive type.(2)

True fungal tissue invasion is represented by the invasive kind, which can be either extremely aggressive and deadly (fulminant)

or slowly progressing and destructive (nonfulminant). Aspergilloma, mycetoma (which often affects one sinus), and allergic aspergillus sinusitis (which affects many sinuses) are other classifications for the non-invasive kind. Although it does not exhibit tissue invasion, the destructive non-invasive form is locally damaging.(2)

Fungal infections are frequently caused by changed natural flora in medically compromised individuals. Patients with chronic diabetes, those receiving long-term treatments (antibiotics and cortisones), individuals undergoing radiation and chemotherapy, immunosuppressive treatments, immunodeficiency disorders, nasal obstructions are particularly susceptible. In addition endodontic perforation during a dental procedure, root canal treatment complications or dental extractions may predispose patients to fungal infections. Since the fungus may infiltrate nearby blood arteries and connective tissue, causing thrombosis and eventually necrosis of hard and soft tissues, it is critical to recognize this infection and take action as soon as possible. Delays in starting treatment could be fatal.(5)

Result

Clinical examination revealed on palpation, the mucosa were rough, bony, nontender, and scraps of necrotic slough could be

Materials and Methods

A 70-year-old male patient reported to the department of oral medicine and radiology in NIMS dental college Jaipur with a complaint of pain in upper left back tooth region and occasional purulent discharge from the mouth as well as foul odor since 6 months. The patient gave a history of intraoral swelling 6months back due to pain in the upper left back decayed tooth, Medical history revealed that the patient had an uncontrolled type 2 diabetic mellitus and stage1hypertension on irregular medication since 5 years and was diagnosed with sinusitis. Patient underwent surgery for sinusitis on march 2024.Physical examination revealed a moderately built and nourished patient with no signs of pallor, icterus, clubbing, or any cervicofacial lymphadenopathy. No signs of extraoral swelling was seen.Denuded mucosa with necrotic gray colored area of exposed bone and slough extending in buccopalatal direction from 22 to 27 tooth region . The surrounding tissues were normal but an oroantral communication found in 26 region.

scrapped off. Nasal examination revealed no abnormality.[Figure1]

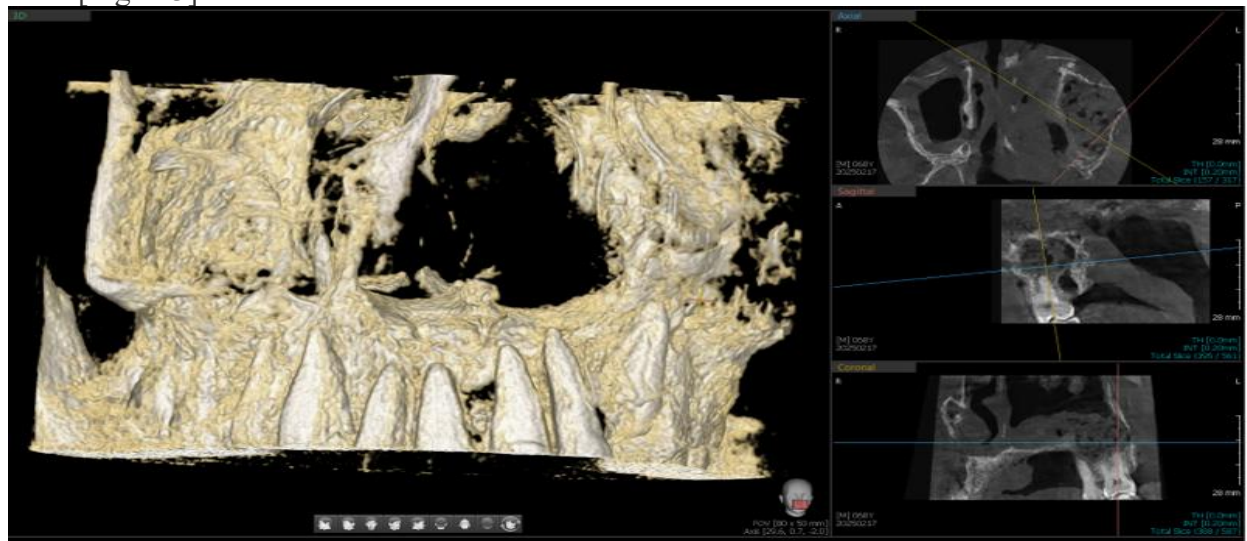


The patient was advised an orthopantomogram (OPG) and cone beam computed tomography (CBCT) scan.

OPG revealed a radiopaque mass in the sinus obscuring its limits, radiolucency extending from alveolar bone in the area of missing teeth superiorly to the maxillary sinus floor, indicating an oroantral communication, and missing left upper canine, first pre molar [Figure 2].



The CBCT scan's Axial Section revealed a breaching in maxillary sinus. Fine coarse of trabeculae is interposed in left maxillary sinus and osteolytic lesion noted in left maxillary sinus.[Figure3]



Sagittal Section shows multiple radiopaque masses in left side of maxillary sinus invading the floor, posterior border and medial border of maxillary sinus and lobulated radiolucent lesions with radioopacity in left side of maxillary sinus.

Superior border of maxillary sinus is not well appreciated.

3D PAN shows increased thickening of radioopacity in floor, posterior, middle and medial surface of left maxillary sinus. Upper

and posterior border of maxillary sinus is not well appreciated with ill defined borders.

A noninvasive fungal infection was suggested by the radiographic diagnostic. Under local anesthetic, a portion of the palatal mucosa's necrotic soft tissue and bone was cut out and sent for histology. Noninvasive fungal infection was the clinical and radiological diagnosis, and histology confirmed this as Aspergillosis. The slices were stained with PAS stain, H and E, and displayed.

The sections displayed necrotic tissue heavily infiltrated with septate fungal hyphae that branched at sharp angles after being stained with H, E, and PAS stain. The walls of the hyphae were parallel and smooth. Granulomatous inflammatory reaction was visible next to the necrotic sites. Aspergillosis was confirmed by the histopathology image.

After the patient's diabetes and hypertension was under control, a comprehensive surgical debridement and curettage of necrotic bone were performed. Amphotericin powder and regular saline were used to irrigate the surgical region. Additionally, the patient received a 200 mg OD tablet of fluconazole for seven days before being summoned back for a check-up. However, the patient failed to show up and was lost to follow-up.

Discussion

Aspergillosis is a saprophytic fungus that is a member of the ascomycetes class. Human paranasal sinuses are frequently affected by *A. flavus*. Regarding its etiopathogenesis, two theories have been proposed. First, the anglophone hypothesis is predicated on spore inhalation. The second is the "French" model, which is based on industrialized settings and explains why there are so many cases of orosinus fistulas and/or maxillary sinus perforations caused by root canal-filling material. These theories are all not very compelling. The most typical manifestation of the illness is persistent

bacterial sinusitis. It can develop into an invasive condition with potentially fatal consequences that resemble cancer.(1)

By releasing a variety of toxins, *Aspergillus* hyphae infiltrate host tissues. Proteases, phospholipases, hemolysins, aflatoxin, phthioic acid, and other toxins are among them. The fungus's hyphal components may enter the walls of tiny to medium-sized blood arteries and infiltrate the mucosa, causing thrombosis, infarction, and necrosis before spreading throughout the body. (2)

Due to the lesion's sluggish growth and noninvasive nature, aspergilloma was diagnosed in 29% of patients a year after symptoms first appeared.(4)

The type of fungus and its morphotype have an impact on the immune response. Depending on whatever component of immunity is compromised, there are different risks for specific infections. Early diagnosis, histological typing, suitable antifungal medication, and surgery are all necessary for the full management of paranasal sinus fungal infection. Radical surgery and intravenous amphotericin B/lipid combination of liposomal amphotericin B with or without flucytosine are necessary treatments for invasive fungal sinusitis. Compared to conventional treatment, endoscopic surgery has been shown to provide effective local control of the fungus and low rates of morbidity. When necessary, sinus surgery must be carried out. The severity of the underlying illness, the extent of the illness at the start of treatment, and the intensity of the treatment all have a direct impact on the prognosis.(1)

Conclusion:

Although fungal infections of the paranasal sinuses are common in healthy individuals, they can exhibit aggressive symptoms and tissue destruction in immunocompromised individuals. Therefore, clinicians should be aware that persistent sinusitis that does not improve with standard treatment may

indicate mycoses of the paranasal sinuses and should be considered as a differential diagnosis. Early diagnosis is essential for both treatment and prognosis. The fungal species involved are identified by culture and histological analysis. The substantial morbidity and mortality linked to this harmful condition can be decreased with appropriate therapy and management of any related systemic causes

Consent declaration from the patient

The authors attest that all necessary patient permission papers have been acquired in the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. Although anonymity cannot be guaranteed, the patients are aware that their names and initials will not be published and that every attempt will be made to conceal their identities.

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