

Sinonasal Tuberculosis Mimicking Malignancy – Case Report and Review of Literature

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Abstract

Primary sinonasal tuberculosis (TB) is a rare form of TB even in developing countries where TB is prevalent, as it usually results from primary foci elsewhere in the body. It often poses a diagnostic dilemma. There are a few reported cases of primary sinonasal TB in literature. The aim of this study is to report another case of primary sinonasal TB. A 27-year-old female presented with 5 months history of nasal blockade and epistaxis. There was no history of cough, night sweat, malaise, anorexia, weight loss, or fever. Examination revealed a mass in the left nasal cavity extending up to the nasopharynx with contact bleeding. Computerized tomography scan showed a hyperdense lesion, suspected to be a tumor, involving the nasal septum and filling the entire left maxillary sinus with bony destruction of the anterolateral, posterior and medial walls. Chest X-ray, retroviral screening, and other biochemical results were essentially normal. The lesion was excised through lateral rhinotomy, and histology revealed sinonasal TB. Primary sinonasal TB is seldomly seen, meticulous and high index of suspicion in the context of clinical, radiological, and pathological characteristics remain paramount and critical in making an otherwise challenging diagnosis.

Keywords: Diagnosis, histology, sinonasal tuberculosis

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INTRODUCTION

Tuberculosis (TB) is a chronic granulomatous inflammation caused by the intracellular acid-fast bacilli *Mycobacterium tuberculosis*. It is prevalent in developing countries where poverty, overcrowding, and acquired immunodeficiency syndrome are endemic. TB occurs in virtually all organs and tissues of the body with a predilection for the lungs, as the primary site related to the mode of transmission through the inhalation of aerosol droplets, and the affinity between the organism and alveolar macrophages.^[1]

Extrapulmonary TB constitutes approximately 25% of all cases of TB, and of this, 10%–35% occurs in the head-and-neck region where nodal involvement is the most common. It is markedly increased in the setting of severe immunosuppression.^[2] Sinonasal TB usually follows pulmonary TB through lymphohematogenous dissemination or lupus vulgaris of facial skin. Even in third-world countries with the highest burden of TB, primary sinonasal TB

is extremely very rare due to the protection of sinonasal mucosa and bactericidal effect of nasal secretions.^[3] Primary sinonasal TB may mimic other nonspecific inflammatory lesions and tumors, thereby posing diagnostic challenges and potentially life-threatening disease.^[4] In some instances, the emergence of drug-resistant organisms threatens to make this disease more difficult to treat.^[5] There is a paucity of reports on the primary sinonasal TB in our environment. Here, we report the case of a primary sinonasal TB mimicking malignancy.

CASE REPORT

A 27-year-old female of poor socioeconomic background attended the otorhinolaryngology outpatient clinic with

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5 months history of the nasal blockade and intermittent epistaxis, no nasal crusting, or postnasal drip. There was no history of cough, hemoptysis, chest pain, night sweat, malaise, anorexia, weight loss, or fever. Examination revealed a mass in the left nasal cavity up to the nasopharynx with contact bleeding. The skin of the dorsum of the nose and other facial area were normal. The ear, mucosal surfaces of the oral cavity, oropharynx, hypopharynx, larynx, and other soft tissues of the neck appear normal. Other systemic examinations were unremarkable. Computerized tomography (CT) scan showed hyperdense lesions involving the nasal septum and filling the entire left maxillary sinus with bony destruction of the anterolateral, posterior and medial walls suspected to be sinonasal tumor [Figure 1]. A chest X-ray showed a normal study; nil acid-fast bacilli detected on GeneExpert; Mantoux test was within the normal limit; retroviral screening was negative; and random blood sugar and other biochemical results were essentially normal. Clinical diagnosis of sinonasal tumor was made, the patient was counseled and had excision through lateral rhinotomy, and the postoperative recovery was uneventful. Macroscopic examination of the tissue revealed fragmented grayish-white cheesy material which measured 12 cm across and weighed 65 g. After adequate sampling, histology showed several granulomas composed of epithelioid histiocytes, multinucleated giant cells, surrounding mantles of lymphocytes, and foci of caseous necrosis, consistent with sinonasal TB [Figure 2]. The Ziehl–Neelsen stain demonstrated scanty acid–fast bacilli, and fungal special stain was negative. Other investigations revealed no evidence of systemic infection or primary focus elsewhere; hence, the diagnosis of primary sinonasal TB was made. She was then placed on first-line antituberculous regimen with rifampicin (10 mg/kg), isoniazid (10 mg/kg), ethambutol (25 mg/kg), and pyrazinamide (25 mg/kg) for the initial (2 months) phase of the treatment, and thereafter

with rifampicin and isoniazid for 7 months. The patient showed a remarkable improvement on follow-up visits.

DISCUSSION

The extranodal TB of the head-and-neck region constitutes <1% of all cases of TB.^[2] Sinonasal TB is an uncommon lesion and extremely rare as a primary presentation but important since, if overlooked, may result in fatal outcome. Gleitsmann reported the first case of TB of the sinonasal area.^[6] The largest number of cases of sinonasal TB reported by a single institution is 8, only two of which involved both the nasal cavity and the sinus, and six of these patients had primary nasal TB.^[7] Swain *et al.* documented six cases of primary sinonasal TB over 5 years.^[2] Moon *et al.* examined the relative frequency of head and neck lesions in 220 patients with TB and reported that only two cases involved sinonasal cavities.^[8] The reason for rarity of the primary sinonasal TB is not well understood and is probably multifactorial, combining inherent resistance of the mucosa to tubercle bacillus, mechanical filtering by vibrissae, ciliary movement, and bactericidal action of the nasal secretion.^[9]

Primary nasal TB is twice as common in women as in men, and most reported cases occurred between the ages of 20 and 84 years.^[10,11] Swain *et al.* reported six cases, of which four were female and two were male, and the mean age was 35 years.^[2] The index case is a 27-year-old female. There is no clear cut explanation for gender preference.

Sinonasal TB may be elusive in its presentation. The pathological changes are often three types: the infection is confined to the mucosa of sinonasal area and leads to polyp formation, the second type affects the bony wall and often leads to fistula formation, and the third type is associated with hyperplastic changes in the sinonasal mucosa and leads to the formation of tuberculoma. Sinonasal TB often leads to complications of septal perforation, nasal stenosis, or atrophic rhinitis if not treated in time.^[12] The patient could present with nasal discharge, nasal obstruction, epistaxis, crusting, pain,

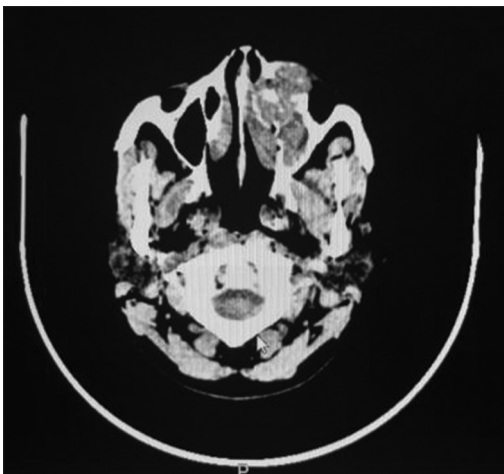


Figure 1: Computerized tomography scan of the nose and sinuses showing hyperdensity lesions involving nasal septum and filling the entire left maxillary sinus with bony destruction of the anterolateral, posterior and medial walls

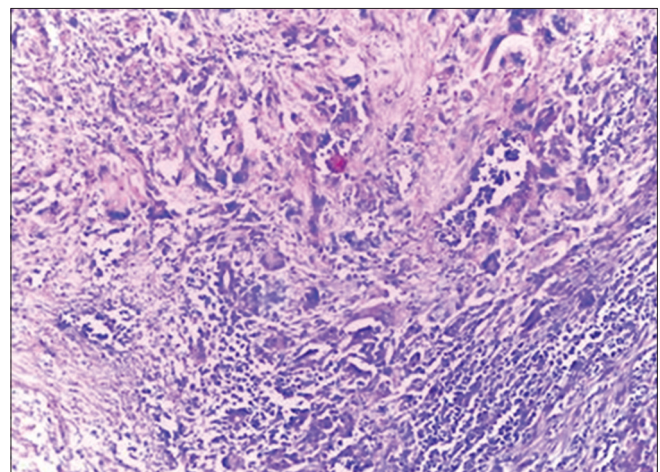


Figure 2: Photomicrograph showing caseating granulomas and giant cells (H and E, ×10)

dryness of the nose, epiphora, mild swelling of cheek, and orbit among others.^[13,14] Due to its rarity and considerable clinical variations, as observed in our patient, it is most often confused with fungal rhinosinusitis and sinonasal neoplasms such as natural killer T-cell lymphoma, other granulomatous diseases such as leprosy, syphilis, and retained foreign bodies.^[4] Beltran *et al.* proposed that the diagnosis of sinonasal TB should be based on the following criteria: absence of clinical response to empirical antibiotics, presence of caseous granulomatous inflammatory lesions in the histopathological analysis, and identification of *M. tuberculosis* in the surgical specimen.^[15]

Radiological studies are vital in making diagnosis and planning for the surgery. CT scan provides the extent of the disease.^[8] The definitive diagnosis is mainly based on histopathological examination which also ruled out malignancy. The distinction of sinonasal TB from sinonasal malignancy is based on nuclear atypia and necrosis. The present case revealed no atypical changes. Similarly, caseous granulomas in the index case helps in distinguishing it from noncaseating granulomatous lesions such as Wegener's granulomatosis or sarcoidosis.^[2]

The treatment of choice for extranodal TB of the head and neck is antituberculous therapy; surgery is done for the early diagnosis. The World Health Organization guidelines consist of a 6-month regimen: rifampicin, isoniazid, and pyrazinamide for the first 2 months, followed by 4 months of rifampicin and isoniazid. The most common cause of treatment failure is poor drug compliance which may lead to the emergence of drug-resistant organisms. Prolonged alternative therapy is required to treat this form of TB, often for up to 2 years. If TB is treated properly and consistently, these resistant forms are much less likely to develop.^[5]

CONCLUSION

Primary sinonasal TB is an extremely very rare lesion even in countries with the highest prevalence of TB. Due to its infrequency and considerable clinical variations, meticulous, and high index of suspicion in the context of clinical, radiological, and pathological characteristics remain paramount and critical in making an otherwise challenging diagnosis.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. 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. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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