

CASE REPORT

Primary Tuberculosis of Frontal Sinus presenting as Intractable Headache

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ABSTRACT

Aim: Headache with sinonasal polyps not responding to routine medical and surgical management is a real challenge to a rhinologist. Here we present a rare case of primary tuberculosis (TB) of frontal sinus presenting as intractable headache.

Background: Pulmonary TB is common in developing countries like India. With the advent of effective treatment, the incidence of otorhinolaryngological TB has come down significantly. Otorhinolaryngological TB constitutes <5% of all cases of extrapulmonary tuberculosis (EPTB). In ear, nose, and throat (ENT), TB of cervical lymph nodes is common in low socioeconomic groups. Most of the ENT TB is secondary to pulmonary infection. Tuberculosis of paranasal sinuses is a rare thing to occur and primary affection of it is still a rarity. Among paranasal sinuses, maxillary sinus is the most frequently involved sinus and is usually unilateral.

Case report: A 35-year-old, diabetic female presented with severe headache, forehead swelling, and nasal blockage. Nasal endoscopy revealed multiple nasal polyps with anterior table of frontal sinus eroded on computed tomography (CT) scan. The patient underwent endoscopic sinus surgery. Histopathological examination (HPE) of sinonasal tissue was suggestive of inflammatory polyps. Her headache persisted and nasal polyps recurred in less than 2 months. On second endoscopic surgery, Draf 2 was done. There was no improvement in headache; HPE suggested granulomatous disease; all other reports of TB were negative, so the patient was put on antituberculosis treatment (ATT). After 1 month of treatment, her headache was relieved, with no recurrence of polyps.

Conclusion: Primary TB of frontal sinus, though rare, can be the cause of headache, and high index of suspicion is the only way to treat it. Moreover, ATT is sufficient to treat and invasive procedures can be avoided.

Clinical significance: Tuberculosis of frontal sinus should be kept in mind in the era of human immunodeficiency virus (HIV) and immunocompromised patients.

Keywords: Case report, Headache, Primary frontal sinus tuberculosis.

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BACKGROUND

Pulmonary TB is common in a developing country like India.¹ With the advent of effective treatment, the incidence of otorhinolaryngological TB has come down significantly. Otorhinolaryngological TB constitutes <5% of all cases of EPTB.² In ENT, TB of cervical lymph nodes is common in low socioeconomic group.³ Most of the ENT TB is secondary to pulmonary infection. Tuberculosis of paranasal sinuses is a rare thing to occur and primary affection of it is still a rarity.^{3,4} Among paranasal sinuses, maxillary sinus is the most frequently involved sinus and is usually unilateral.¹ Here we present primary TB of frontal sinus presenting as intractable headache.

CASE REPORT

A 35-year-old female presented with intractable frontal headache and bilateral nasal blockage for 3 months since December 2015. She was diagnosed as suffering from diabetes mellitus and hypertension. On ENT examination, she had multiple polyps in both nasal cavity and 0.5 cm size spherical skin covered soft swelling on her forehead just above left glabella. She was put on guarded doses of systemic oral steroid for a week and antihistaminic, oral antihypertensive, hypoglycemic drugs for a week. As her headache was very severe, she was admitted and put on injectable analgesics. Meanwhile, we performed diagnostic nasal endoscopy that revealed extensive polyps occluding both nasal cavities, coming from all sinuses. Patient was further posted for CT scan of paranasal sinuses, which revealed bilateral polyps of frontal (Fig. 1), ethmoid sinuses with obstructive sinusitis, probably fungal etiology with small defect in anterior table of left frontal sinus (Fig. 2).

As her headache did not respond to medical management, she was posted for endoscopic sinus surgery after her diabetes and blood pressure were controlled.

Intraoperatively, we found that all sinuses were completely filled with multiple polyps; there was a spherical swelling in left frontal sinus with large defect in anterior table of left frontal sinus. We marsupialized the cystic



Fig. 1: Computed tomography scan, coronal cut, both frontal sinus, hazy

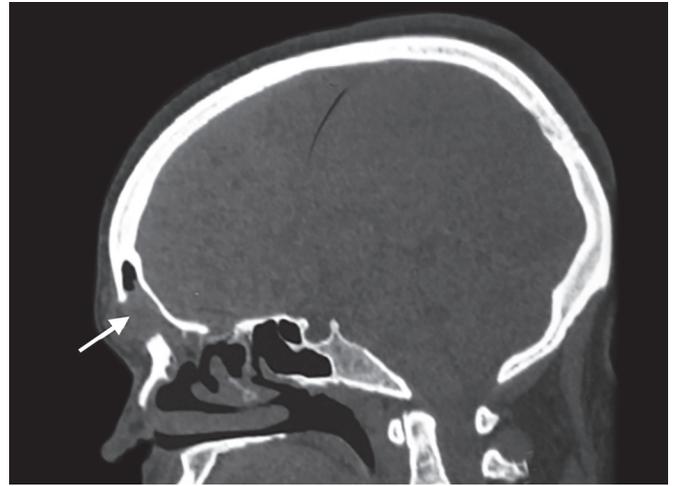


Fig. 2: Computed tomography scan, sagittal cut, anterior table of left frontal sinus eroded

mass in left frontal sinus, cleared all the sinuses, widened all sinus openings, and preserved as much sinus lining as we could. Postoperatively, she was put on saline nasal washes, fluticasone fumarate nasal sprays, oral antihistaminic, and regularly followed up with weekly nasal endoscopy. Histopathology confirmed inflammatory nasal polyps.

Postoperatively, despite her blood pressure and blood sugar remaining normal, her headache persisted. Two months postoperatively, we got her CT scan of paranasal sinuses, which revealed recurrence of nasal polyp in right maxillary sinus with defect in anterior table of left frontal sinus, as seen on preoperative CT scans with recurrence of swelling in left frontal sinus. We continued with medical management as local fluticasone spray, saline washes, and oral antihistaminic. Her headache became more severe and the swelling on forehead became little bigger. We posted her again for endoscopic sinus surgery. Intraoperatively, we found that all sinuses were wide open, the right middle turbinate was lateralized, and there was small polyp in right maxillary sinus, spherical swelling in left frontal sinus. We cleared disease from right maxillary sinus, bolgerized right middle turbinate, did Draf 2 procedure on left frontal sinus (Fig. 3), marsupialized the mucocele, which had eroded the anterior table of frontal sinus, and finally put her on same medical management.

Postoperatively, her forehead swelling disappeared but the intractable headache persisted. The HPE revealed possibility of granulomatous etiology. We did workup for TB, her Montoux test came negative, X-ray chest was normal, and erythrocyte sedimentation rate was 28. We put her on ATT as Category 1. She has completed 1 month of ATT but there was no relief in her headache. After two complete months of ATT, she got complete relief in her headache; there was no recurrence of polyp at 6 months postoperatively.



Fig. 3: Magnetic resonance imaging short tau inversion recovery, draf 2, left frontal sinus

DISCUSSION

The nose is least liable to invasion by acute TB of any part of the respiratory tract, because of the structure of mucosa, respiratory movements of the cilia, and bactericidal secretions. However, nose can become infected either directly (primarily) through the air current by people sneezing or coughing, or by direct inoculation by finger-borne infections, or by instrumentation.⁵ Tuberculosis of nose and paranasal sinuses is contagious. Trauma and atrophic changes of nasal mucosa make it more vulnerable to TB infection.⁶

Among nose and paranasal sinuses, *Mycobacterium tuberculosis* affects nose and maxillary sinus.^{1,7} Primary affection of frontal sinus is very rare. These are commonly secondary to pulmonary infection, frequently associated with immunocompromised state, diabetes, and HIV infection.³ Diabetes mellitus is not associated with EPTB, but it is associated with increased risk of active, culture-confirmed pulmonary TB.^{7,8} *Diabetes mellitus* type

2 patients have an increased susceptibility to develop pulmonary TB; this is partly due to the impairment of the innate immunity because of their higher glucose concentrations.

The common presenting symptoms are nasal discharge, nasal blockage, epistaxis, reduced sense of smell, and occasional headache.⁹ Headaches may occur with invasion of the sinuses and extension to cranial cavity.^{10,11} As most of the rhinology headaches are due to acute sinusitis compared with chronic sinusitis, high index of suspicion is the only way to diagnose.¹ The diagnostic criteria put forth by the International Headache Society for "headache attributed to sinusitis" require a frontal headache (meaning in the region of forehead), evidence of rhinosinusitis (on a CT, magnetic resonance imaging, nasal endoscopy, or by lab data), and resolution of the headache with appropriate sinusitis treatment.¹

On diagnostic nasal endoscopy, the lesion is more exophytic than ulcerative.^{1,12} Sometimes one may find polyps as occurred in this case. This needs to be differentiated from fungal sinusitis, allergic polyps, Wegener's granulomatosis, and other polypoidal and granular lesions.

High suspicion of the entity, Ziehl-Neelsen (ZN) staining of the nasal discharge, X-ray chest, polymer chain reaction of discharge, and histopathology of tissue from nose or sinuses is the only way to diagnose it.⁹ Caseous necrosis is not a characteristic feature but helps rule out differential diagnosis which present with noncaseating granulomas, e.g., Wegener's granulomatosis or sarcoidosis.

CONCLUSION

Diagnosis of TB of paranasal sinuses is still elusive. All patients with long-standing headache not responding to routine medical management should be subjected to detailed ENT examination and nasal discharge smear for acid fast bacilli, biopsy from exophytic lesion, or nasal mucosa must be sent for HPE, ZN staining, and TB polymerase chain reaction, to rule out TB. Invasion of bone, fistula formation on CT scan is a common finding.

Computed tomography scan will rule out intracranial extension also. High index of suspicion is the only way for early diagnosis for these patients, who are very well manageable by ATT, and surgery has limited role which can be avoided.

CLINICAL SIGNIFICANCE

Tuberculosis of frontal sinus should be kept in mind in the era of HIV and immunocompromised patients.

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