Case Reports
Primary Tuberculosis of the Ethmoid and Sphenoid Sinuses — A Rare Entity


Abstract
In developing countries like India, incidence of pulmonary tuberculosis is still common as most of the population belong to low socio-economic strata with poor nutrition and hygiene. Nasal tuberculosis is rare but much rarer is tuberculosis of paranasal sinuses without nasoseptal involvement. The symptoms most frequently reported are nasal obstruction and rhinorrhea possibly associated with headache and/or epistaxis. These symptoms are nonspecific and may present a confusing diagnostic problem. In such undiagnosed pathology of the sinonasal tract tuberculosis should be kept in mind. Here we present a 58 yr old lady, who presented with neurological symptoms. Her symptoms were on right side of the face but on MRI scan a left side soft tissue dural based lesion in the ethmoid, sphenoid, parasellar region and along cavernous sinus was noted. It was suspected to be tumour, lymphoma or granulomatous disease. On biopsy, through endoscopic endonasal approach histopathological diagnosis of tuberculosis was got. Patient responded well to antitubercular drug therapy.

Introduction
Even though pulmonary tuberculosis is very common, it rarely involves the paranasal sinuses. It is evident by the fact that Mayerson observed only a single patient suffering from this condition during a five year study period at a large tuberculosis hospital.1 Although primary tuberculosis of the sinuses is rare it should be kept in mind as a differential diagnosis in any undiagnosed infection or inflammatory conditions of the paranasal sinuses. It involves especially the maxillary sinus and is usually unilateral. By and large tuberculosis of sinuses is seen in adults. Occasionally, it is seen in children. This particular case was interesting because clinically it was considered as tumour involving the sinus and parasellar region. Presenting symptoms were on right side but pathology was found to be on left side. The histological report of the diseased tissue removed proved the diagnosis as tuberculosis.

Case Report
A 38-year-old woman with no known contact with tuberculosis patient, presented with headache, right sided eye pain and drooping of right eyelid since 15 days. She was admitted 8 months ago with complaints of headache, right sided facial numbness and diplopia for which MRI scan was done which was normal except for a small vascular loop at the root exit zone of both trigeminal nerves. She was then diagnosed as isolated right lateral rectus palsy and trigeminal neuralgia. She was treated with oral steroids. She was completely free of symptoms after 7 days of treatment and was discharged from the hospital.

Her present complaints started since 15 days. On clinical examination she had complete ptosis of right eye and decreased peripheral field of vision with normal visual acuity. Her neurological examination revealed 3rd, 4th and 6th cranial nerve palsies. Other cranial nerves and neurological examination was
within normal limits. Her routine blood investigations were normal except for slightly raised ESR and ACE levels. CSF and anti nuclear antibody (SS-A, SS-B) were also done which was negative.

MRI of brain was done to rule out any intracranial space occupying lesion. A soft tissue dural based lesion in the left posterior ethmoid, sphenoid, parasellar region and along the cavernous sinus, isointense on T1 weighted and relatively iso to hyper intense on T2 weighted and post contrast homogenous enhancement was shown. CT scan of paranasal sinuses was also advised to know any bone erosion and the character of the lesion. CT scan revealed soft tissue shadow in the left post ethmoid and sphenoid air cells with minimal bone erosion. Possibility of inflammatory pseudotumour, granulomatous lesions (Tuberculosis, Sarcoidosis, Fungal) and en plaque meningioma or lymphoma were put forth.

Patient was taken for diagnostic nasal endoscopy and biopsy of the lesion. Diagnostic nasal endoscopy revealed mucosal bulging in the posterior ethmoid sinus and frontal recess on the left side also extending into the sphenoid sinus on the same side. Anterior and posterior ethmoid sinuses were opened and biopsy was taken from the lesion.

Histopathology was reported as necrotising granulomatous sinusitis of the left ethmoid consistent
with Tuberculosis. No fungus or AFB was seen on special stains and there was no evidence of malignancy.

She was started on three drug Anti-Koch’s therapy (isoniazid, rifampicin and pyrazinamide). The lesion responded well to antitubercular drugs in few days and there was significant improvement in ptosis and headache. She was discharged from the ward 5 days after partial recovery of ptosis.

**Discussion**

Tuberculosis is an infectious disease caused by an intracellular acid-fast bacillus demonstrated by the Ziel-Nielsen stain. Extrapulmonary sites of tuberculosis currently represent 15% of all sites. Tuberculosis of the nose and sinuses has become so infrequent that it is virtually a forgotten disease entity among younger practitioners in this country. It can occur in all segments of our population and may present a confusing diagnostic problem. It was first reported in 1761 by Morgagni. Mayerson states that any sinus may be involved, the most common being maxillary and ethmoid sinuses. Sixty-five cases of tuberculosis of the paranasal sinuses have been reported since 1993 with a high frequency for the maxillary and ethmoid sinuses. Only 3 cases involving the sphenoid sinus have been reported. Nemir et al reported involvement of base of skull in one case.

Inoculation occurs directly via infected micro droplets or, more rarely, from primary pulmonary tuberculosis. Tuberculosis of the paranasal sinuses is also contagious as pulmonary tuberculosis. The symptoms most frequently reported are nasal obstruction and rhinorrhea possibly associated with
headache and/or epistaxis. These symptoms are nonspecific and may not give the suspicion of sinus tuberculosis.

Usually three forms of sinonasal tuberculosis can be seen. More often we can see infection confined to the mucosa, the antrum is filled with polypi and thickened mucosa with a boggy, pale appearance, purulent discharge is minimal and the diagnosis may be difficult. The next common form has bony involvement and fistula formation, discharge is abundant and the tubercle bacilli may be readily found and the much rarer form is hyperplastic with the formation of tuberculoma. Prognosis depends upon the involvement, mucosal lesions respond well to proper treatment.

The morphological appearance on endoscopy is exophytic more often than ulcerative. The diagnosis is based on histological examination demonstrating epithelioid and giant cell granulomas associated with areas of caseous necrosis. Compared with other types of granuloma, the tubercular variety tends to exhibit a greater number of epithelioid and giant cells. The presence of caseous necrosis is pathognomonic of tuberculosis and rules out other diagnoses such as Wegener’s granulomatosis or sarcoidosis. Direct examination generally does not demonstrate bacilli and culture is usually negative. In doubtful cases, PCR can be used to demonstrate bacterial DNA.

The differential diagnosis essentially comprises other mycobacterial infections and granulomatous diseases like syphilis, rhinoscleroma, fungal infections, Wegener’s granulomatosis, Sarcoidosis and parasitic infestations such as leishmaniasis.

Treatment is medical, based on an antibiotic combination including rifampicin, isoniazid, and pyrazinamide. Surgical treatment is unnecessary in this site. The clinical course is generally favourable.

Conclusion

Ours is a rare case of isolated ethmoid and sphenoid tuberculous sinusitis involving parasellar and cavernous sinus presenting with neurological symptoms without any nasal complaints. Initial work up of the patient made to think of a diagnosis of intracranial SOL. Imaging studies revealed to be sinus tumour involving parasellar region. Right side symptoms were difficult to be explained by left side lesion. Finally biopsy of the lesion was done under general anaesthesia. Histopathological examination confirmed the diagnosis of tuberculosis. There was no evidence of pulmonary tuberculosis on further work up. So this was the primary tuberculosis of the ethmoid and sphenoid sinuses. Sinus tuberculosis usually involves maxillary sinus. Isolated involvement of the ethmoid and sphenoid sinus is very rare.

References