Tuberculosis of paranasal sinuses

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Abstract Nasal tuberculosis is very rare but much rarer is tuberculosis of paranasal sinuses. It involves especially the maxillary sinus and is usually unilateral. We report an unusual case of tuberculosis of frontal and maxillary sinus in a 68 years old male, who presented with a swelling above left medial canthus, with no other eye or nasal complaints. Clinical and radiological findings on our initial evaluation suggested that the patient had left frontal mucocoele with bilateral maxillary haziness. Diagnosis was established on FNAC report and subsequent Ziehl – Neelsen staining of nasal swabs and tuberculin skin test. Later chest x-ray examination was suggestive of pulmonary tuberculosis, which was the primary cause. Patient responded well to antituberculosis drug therapy.

Keywords Tuberculosis of paranasal sinuses · Tuberculosis of maxillary sinus / frontal sinus

Introduction

In developing countries like India, incidence of pulmonary tuberculosis is very common as most of the population belong to low socio-economic strata with poor nutrition and poor hygiene. But, still tuberculosis rarely involves the paranasal sinuses. Gleitsmann [1] reviewed the literature on tuberculosis of the antrum. The reports indicated that the disease was the result of extension from the neighboring focus. The majority of patients had pulmonary tuberculosis.

In this article, we report a case of tuberculosis of maxillary sinus and the frontal sinus mucocoele secondary to pulmonary tuberculosis.

Case report

A 68-year-old male came to our Out Patient Department with complaints of a painless left eye swelling since two months. He had no other symptom except this inferolateral displacement of eyeball. Patient's general health was excellent.

On physical examination, 1 × 1 cm soft swelling with wide base situated just above the inner canthus of left eye was seen, which was apparently arising from the inferior wall of the left frontal sinus (Fig. 1).

Anterior rhinoscopy showed purulent discharge in left nasal cavity. Rest of otolaryngologic examination was normal. Ophthalmologic examination showed a slight inferior and lateral deviation of the left eyeball, but there was no diplopia. The patient's eye movements and vision were normal. No palpable neck nodes were detected and systemic examination did not yield any significant findings.

X-rays of paranasal sinuses showed a diffuse opacity of the left frontal sinus with expansion of the sinus as comparison to the right side. There was haziness of maxillary sinuses on both sides.

Diagnostic nasal endoscopy showed purulent discharge in middle meatus on the left side.

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Computed tomography scan showed typical features of a frontal mucocoele, with expansion of sinus and marked thinning of floor of left frontal sinus. There was inferolateral displacement of globe. Both maxillary sinuses were hazy (Fig. 2). Fine needle aspiration cytology from the swelling revealed that the mass consisted of granuloma with caseous necrosis along with langhan's giant cells and epithelioid cells (Fig. 3). These features were consistent with tuberculosis of the sinus. Culture of pus for Acid fast bacilli was positive. Nasal swabs of purulent discharge from middle meatus both sides were taken for staining and culture. Left side was positive for AFB while right side was negative. Subsequent, assay for purified protein derivative (PPD) revealed positive (20×20 mm) report. The patient's erythrocyte sedimentation rate was 40 mm during the first hour. The total leucocyte count was normal. The liver and kidney function tests were within normal limits. Analysis of

Fig. 1 Pre operative photograph of patient with swelling situated just above the inner canthus of left eye (frontal view)

Fig. 2 Photograph of coronal computerized tomography scan of paranasal sinuses showing features of a frontal mucocoele with expansion of sinus, marked thinning of floor of left frontal sinus and with inferolateral displacement of globe with haziness of both maxillary sinuses

Fig. 3 Photomicrograph showing Langhan's giant cells, epithelioid cells with cluster of acid fast bacilli (Ziehl – Neelsen stain, 40 X mag.)

sputum for AFB was negative but findings on chest x-ray were suggestive of active tuberculosis.

On the basis of positive reports of FNAC, left side middle meatus nasal swab and chest x-ray, we established a diagnosis of pulmonary tuberculosis with secondary tuberculosis of left frontal and maxillary sinus.

The patient was started on standard four drug antituberculosis therapy (rifampicin, isoniazid, ethambutol and pyrazinamide). After 6 weeks of antituberculosis drug therapy patient was taken up for left Functional Endoscopic Sinus Surgery and infundibulotomy was done. Frontal recess was opened and mucocoele drained. Middle meatal antrostomy was done to drain the maxillary sinus. Material was sent for histopathological examination which revealed tubercular granuloma. After 6 months on antituberculosis drug regimes, the patient was asymptomatic. There was complete resolution of chest as well as paranasal sinus lesions and E.S.R. was reduced to 18 mm during the first hour.

Discussion

Tuberculosis of the sinonasal region is a rare condition [2]. It was first reported in 1761 by Morgagni [2]. In 1852, Willigk [3] reported 1 patient of nasal tuberculosis among 476 patients of tuberculosis. Nemir et al [4] reported involvement of base of skull in one case. Gleitsmann [1], in 1907, reported that a search of the literature revealed only 20 cases of maxillary sinus. The other sinuses were infected even less frequently. Myerson [5] states that any of the sinuses may be attacked by tuberculosis, the maxillary and ethmoid being the most susceptible. He collected from the literature 27 cases of maxillary sinusitis, 10 of ethmoid, 3 each of sphenoid and frontal sinuses and 1 in which all the sinuses were involved. He also cited 5 cases of multiple sinusitis of tuberculosis origin. Pantazopoulos [6] reported a case of tuberculosis of the frontal

sinus which showed the clinical features of a frontal sinus mucocoele

The disease is nearly always secondary to pulmonary or extra pulmonary tuberculosis which reaches the maxillary sinus by the way of blood stream or by a direct extension into the sinus [7].

Hersch's [8] case is a good example of haematogenous spread: the patient had tuberculosis of the spine with haematogenous spread to the antrum.

Pathologically, three types can be recognized: In the first type infection is confined to the mucosa only. The antrum is filled with polypi and thickened mucosa which presents a boggy, pale appearance. Purulent discharge is minimal and the diagnosis is difficult. This is the more common type. The second type has bony involvement and fistula formation. Discharge is abundant and the tubercle bacilli are readily found and the third type is hyperplastic type with the formation of tuberculoma. This is the rarest type. Prognosis depends upon the involvement, mucosal lesions respond well to proper treatment. Bone involvement and fistula formation offer a poor prognosis.

The most important symptoms of tuberculosis of frontal and maxillary sinuses are:

- i. Headache,
- ii. Fronto-ethmoid swelling,
- iii. Purulent secretion from nose,
- iv. Deteriorated sense of smell, and
- v. Nasal bleeding.

Pain, nausea, dizziness, lacrimation and visual disturbances may further occur in severe cases with osteitic changes in the orbit.

The diagnosis is based on the results of Ziehl – Neelsen staining for AFB and culture of organisms obtained from tissue or nasal washings. Characteristic finding on histopathologic feature is the presence of granulomas with central caseous necrosis. The areas of necrosis are surrounded by epithelioid cells and by langhan's giant cells that feature multiple nuclei arranged in a horse shoe shaped pattern. Compared with other types of granuloma, the tubercular variety tends to exhibit a greater number of epithelioid and giant cells. A positive reaction to PPD testing provides additional confirmation of the diagnosis.

The unusual feature about our case is that the patient presented with clinical appearance of a frontal mucocoele and rare site of tuberculosis. Our patient did not exhibit any other symptoms that would have suggested a diagnosis of tuberculosis. Our final diagnosis was not established until we obtained the results of fine needle aspiration cytology

and other tests. Also the patient responded well to antituberculosis drug therapy.

In any suspected case of nasal tuberculosis, tissue should be sent for culture and Ziehl – Neelsen staining, although mycobacterium tuberculosis can be grown only rarely. The more recently developed polymerase chain reaction (PCR) assay holds great promise as a diagnostic tool; as few as five organisms are all that is needed to allow for identification of DNA, even in a preserved specimen [9]. However, the exact specificity of PCR has yet to be determined.

Summary

A case of frontal and maxillary tuberculosis is presented. The case was diagnosed incidentally when the fine needle aspiration showed the presence of caseation with epithelioid cells and langhan's giant cells. Staining for Acid Fast Bacilli were positive and importance of bacteriological examination of middle meatus discharge / antral washings can not be overlooked. The radiological investigation that is chest x-ray which was done after FNAC report was also assertive for pulmonary tuberculosis. Finally, histopathology plays an important role in diagnosis.

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