CASE REPORT

Maxillary sinusitis with pulmonary tuberculosis

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SUMMARY

Tubercular infection of the nasal cavity is an infrequently encountered condition. More so, after the discovery of relevant antibiotics, nasal sinus tuberculosis is not commonly seen. Few cases have reported tuberculosis of the paranasal sinuses, nasopharynx and larynx. With the increasing incidence of HIV, these rare forms of infection have started re-emerging. We present a case of a middle aged man presenting with nasal cavity lesion along with pulmonary tuberculosis, which came to light only after the diagnosis of maxillary sinus tuberculosis.

BACKGROUND

Primary tuberculosis of the paranasal sinuses is an uncommon occurrence. It usually occurs secondary to tuberculosis of the lungs or larynx or sometimes may occur as a primary infection.^{1 2} Tuberculosis of the nasal cavity was first described by Professor G Morgagni, 1971, Italy,³ when he noticed presence of ulcers in the soft palate and nasopharynx, while performing a postmortem examination of a patient of pulmonary tuberculosis. Even in countries with high incidence of pulmonary tuberculosis, sinopharyngeal tuberculosis is infrequent.^{4 5} Although the incidence of extrapulmonary tuberculosis is increasing, it is still commonly overlooked when it occurs at atypical sites.⁶

CASE PRESENTATION

A 50-year-old man presented with fever, swelling on the left side of his face, purulent discharge from the nose and left-sided nasal blockage for 2 weeks. He had been taking oral antibiotics for the same duration but his symptoms persisted. The swelling was variable in consistency, tender on palpation with involvement of overlying skin. Nasal examination revealed purulent discharge from left middle meatus. Blood investigations revealed total leucocyte count (TLC) 12 500 (4000–11 000); differential percentage leucocyte counts (DLC), neutrophils 75 (40–60%), lymphocytes 24 (20–40%), eosinophils 1 (1–4%) and monocytes 0 (2–8%), and erythrocyte sedimentation rate ESR) 35 mm (<20 mm/h) after 1 h by Westergren method. The random blood sugar examination was 260 mg/dL, though the patient was not a known diabetic. He was further investigated for his diabetic status and his fasting blood sugar level was 166 mg/dL (<110 mg/dL) and postprandial blood sugar level was 205 mg/dL (<126 mg/dL). His glycated haemoglobin levels, which give information about diabetic status for the past 3 months, were raised to 7.8 (<6.5). This showed that the patient had been diabetic but was unaware of his disease. The patient was then taken on oral hypoglycaemic

drugs so as to improve his blood sugar levels. The patient was a farmer by occupation and had no evidence of high-risk behaviour. An HIV test was performed with his consent using ELISA and was found to be negative. X-ray of the paranasal sinus revealed haziness in the left maxillary sinus (figure 1). Non-contrast CT scan (NCCT) of the paranasal sinuses figure 2 revealed opacity of the left maxillary sinus. Antral puncture of the left maxillary sinus was performed under local anaesthesia. Purulent discharge obtained from the procedure was sent for microbial examination including Gram staining, fungal elements, acid-fast bacilli (AFB) staining, histopathology and mycobacterial culture. Histopathology revealed the presence of non-caseating granulomatous lesions. Gram stain, culture sensitivity for pyogenic bacteria and fungal element staining were negative, AFB stain was positive suggesting tubercular pathology. Primary occurrence of tuberculosis of the sinus is not very common, hence a chest X-ray posteroanterior (PA) view was performed to know the primary site. The patient did not have any history of tuberculosis or any contact with tuberculosis. X-ray and contrast-enhanced CT scan of the chest showed right-sided pleural effusion with right-sided cavitary lesion (figure 3A,B). Sputum smear examination for AFB stain was positive. The pleural fluid aspirated from the right side was straw coloured, lymphocytic and predominant with adenosine deaminase 89 IU/L (<40 IU/L). The patient was prescribed primary four antitubercular

Figure 1 Haziness in the left maxillary sinus.

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Figure 2 CT of the coronal section showing left maxillary sinusitis.

drug regimen constituting rifampicin, isoniazide, ethambutol and pyrazinamide, given daily according to weight for 2 months followed by rifampicin and isoniazide for 4 months. The patient was told about the possible adverse effects of the drugs, which could be easily managed with supportive medications. Sputum smear examination performed after 2 months of treatment was found to be negative for AFB. Culture of nasal discharge for mycobacteria turned out to be positive and sensitive to all four primary antitubercular drugs. Clinically, the patient showed improvement in his nasal symptoms with decreased nasal discharge and less pain over the left maxillary sinus after the same duration. During the course of treatment, the patient was placed under regular follow-up. At the end of the treatment, the patient was symptom free and his chest and paranasal sinus skiagrams showed radiological clearing (figure 4A,B).

INVESTIGATIONS

TLC 12 500/mm³, DLC polymorphs 75%, leucocytes 24%, eosinophils 1%, monocytes 0%; ESR 35 mm/h; CT of the paranasal sinuses; AFB stain; X-ray chest PA view, CT of the thorax.

DIFFERENTIAL DIAGNOSIS

- ▶ Nasal polyposis with secondary infection
- ▶ Wegener's granulomatosis
- ▶ Sarcoidosis
- ▶ Rhinosporidiosis
- ▶ Rhinoscleroma

TREATMENT

Four primary antitubercular drugs, rifampicin, isoniazide, ethambutol and pyrazinamide for 2 months followed by rifampicin and isoniazide for 4 months.

OUTCOME AND FOLLOW-UP

The patient responded to the treatment very well and after 2 months his nasal symptoms had resolved. Chest X-ray was performed to evaluate the lung lesions and was found to be clear.

DISCUSSION

The presentation of primary sinuses tuberculosis is an uncommon event as the mucosa is inherently resistant to the tubercular bacilli. A discontinuity in the mucosal epithelium facilitates the entry and growth of organism and, hence, the disease.^{1 2 4} There have been incidences of presentations with sinonasal tuberculosis in patients coming in contact with open cases of tuberculosis having sneezing and coughing, or in patients undergoing nasal procedures where blood or lymphatic vessels are responsible for the inoculation of organism.⁷ Nasal tuberculosis is twice as common in females than in males.^{8 9} There are mainly three types of pathologies described in sinonasal tuberculosis: (A) infection confined to mucosa, leading to polyp formation; (B) bony involvement and fistula formation and (C) hyperplastic changes associated with formation of tuberculoma.¹⁰ Our patient had presented with stuffiness of the left nostril with pain over the left maxillary areas and swelling over the left eyelid. Fortunately in our case, the disease had not progressed to involve the underlying bones, causing osteomyelitis. Antral puncture, followed by antral wash was done to relieve the patient of symptoms and the material thus obtained was subjected to smear and culture for AFB. On histopathological examination, non-caseating granulomatous lesions were present. The smear for AFB was found to be positive so primary antituberculosis drug therapy was started with rifampicin, isoniazide, ethambutol and pyrazinamide and followed by rifampicin and isoniazide after a period of 2 months. It has been seen that the secretions and swabs have low yield and low diagnostic value and, hence, culture for AFB is more sensitive and has more specificity than smear.⁸ Keeping this in mind, the nasal secretions were sent for culture and growth was seen in 2 months. It has been proven from various studies that patients with diabetes are at 3–5 times greater risk for acquiring tuberculosis. Although our patient was not aware of it earlier, on investigation he was found to be diabetic, which stratifies him in the vulnerable category for acquiring tuberculosis.¹¹ PCR techniques may be used but their use is limited due to cost issues in developing countries. In our case, PCR was also not performed due to similar reasons. Exophytic lesions have been found to be more commonly associated with sinus tuberculosis than with ulcerative pathologies. Other clinical conditions presenting similarly, which need consideration, are Wegener's granulomatosis, leprosy, sarcoidosis, rhinoscleroma, rhinosporidiosis, foreign bodies or suppurative sinus disease.^{7 12} The patient responded to the treatment very well. At the end of the treatment chest

Figure 3 (A) Chest X-ray posteroanterior view with right-sided effusion and a heterogeneous opacity on the right side. (B) CT of the chest showing right-sided cavitary lesions with right-sided pleural effusion.

Figure 4 Clearing of (A) nasal passages after treatment and (B) chest X-ray after antitubercular therapy.

X-ray was performed to evaluate the lung lesions and was found to be clear.

Early diagnosis and meticulous evaluation and investigations are helpful in effective management of maxillary sinus tuberculosis. Although extrapulmonary tuberculosis is uncommon, tuberculosis is a very common disease in patients having co-existent diabetes or HIV, and is showing a rising trend worldwide. Hence, the possibility of tuberculosis should never be overlooked in patients presenting with a history of low-grade fever and not responding to antibiotics for a long duration; such patients should be simultaneously evaluated for diabetes or

immune suppressed conditions. On histopathological examination, caseating or non caseating granulomas should be suspected for tuberculosis unless proven otherwise.

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Learning points

- Conditions affecting the competence of the immune system increase the incidence and prevalence of extra pulmonary tuberculosis. Among extrapulmonary tuberculosis, lymph nodes are most commonly involved and involvement of nasopharynx or nasal sinuses is still uncommon.
- In countries where tuberculosis is prevalent, one should always be alert to visualise tuberculosis in all its known diverse forms. Clinical suspicion supported with meticulous investigation can easily diagnose tuberculosis, which is an easily treatable disease.
- Diabetes is on an escalating trend, hence, as in HIV–tuberculosis, screening tests for diabetes should be carried out in all patients of tuberculosis so that better management can be planned.

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