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Case Report

Coexisting tuberculosis of middle ear and maxillary sinus: a rare presentation

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ABSTRACT

Coexisting tuberculosis of middle ear and paranasal sinuses is a diagnostic challenge due to rarity of occurrence and clinically variable presentation. A case of tuberculous otitis media along with involvement of maxillary sinus is reported. The patient presented with bilateral ear and nasal discharge for 4 years. Symptoms used to get partially alleviated with standard antimicrobial therapy. Otoscopy showed bilateral large, central perforations of tympanic membrane with granulations in the middle ear. In the nasal cavity, mucopurulent discharge was noted with crust formation. Pure tone audiometry (PTA) showed 63.3 dB moderately severe mixed hearing loss in right ear and 83.3 dB severe mixed hearing loss in the left ear. Patient underwent cortical mastoidectomy and tympanoplasty on left side with middle meatal antrostomy on right side. Pale granulation tissue from middle ear and mastoid as well as unhealthy mucosa from maxillary sinus was sent for histopathological evaluation which revealed a diagnosis of tuberculosis. On further work up patient was found to be sputum positive for acid fast bacilli (AFB). Antitubercular therapy was initiated with good follow-up response. Middle ear and maxillary sinus are rare sites involved in tubercular infections. Isolated cases of tuberculous otitis media or maxillary sinus have been reported but concomitant involvement of both these sites has not been reported in the available literature.

Keywords: Extra-pulmonary, Middle ear, Maxillary sinus, Tuberculosis

INTRODUCTION

Tuberculosis (TB) is one of the oldest diseases caused by *Mycobacterium tuberculosis or Mycobacterium bovis* (human/bovine). It remains a major health problem in developing countries. 15-20% of cases manifest as extrapulmonary TB.[1-3] Incidence of tuberculous otitis media is 0.04 to 1% of all forms of TB and 4% of extrapulmonary TB involving head and neck region whereas nasal tuberculosis constitutes 0.31% of extrapulmonary tubercular infections.[1,4] Maxillary sinus has been reported as the preferential site in the paranasal sinuses. Majority of cases affecting ENT locations are secondary to pulmonary TB but rarely there occurs primary infection via nasal route and Eustachian tube.[5,6]

Few cases of TB of middle ear or maxillary sinus have been reported in literature.[7] Even with extensive literature search, we could find only one case of simultaneous involvement of middle ear and lateral wall of nasal cavity.[2] Rarity of tuberculosis affecting middle ear and maxillary sinus in the same patient prompted us to report the present case.

CASE REPORT

58 years old male presented with bilateral otorrhoea, progressive hearing loss and tinnitus for 4 years. He also complained of bilateral nasal blockage and right side nasal discharge with postnasal drip for last 3 years. Severity of aural symptoms was more on the left side.

Discharge from the ears was scanty and foul smelling which used to get relieved intermittently with medication. There was no history of facial deviation. Discharge from right nostril was mucopurulent, foul smelling and occasionally blood stained. Patient gave history of occasional cough with expectoration which used to subside with medication. Patient was a chronic alcoholic and a known case of anxio-depressive disorder for which he was on antidepressant drugs for the past 6 years. General physical examination was within normal limits.

Otoendoscopic evaluation showed a large sized central perforation in the right ear with discharge. Middle ear mucosa was pale. Left ear showed a moderate sized central perforation with discharge, pale middle ear mucosa, granulations and epithelial ingrowth along the posterior margins of the perforation. Ossicles could not be visualized. Bilateral facial nerves were clinically intact. Rinne's test with 512Hz was negative on both sides. Weber's test was lateralized to right ear.

Absolute bone conduction was reduced on both sides. Diagnostic nasal endoscopy revealed crusts in bilateral middle meatuses with mucopurulent discharge more on the right side. Oral cavity and oropharynx examination was normal. PTA showed 63.3 dB moderately severe mixed hearing loss in right ear and 83.3 dB severe mixed hearing loss on left ear.

Investigations showed Hb 13.3gm/dl, ESR 66mm/1st hour (Westergren), platelet count 3.49 lakh/cu,mm, serum creatinine 0.72 mg/dl, serum Na-133 meq/l, K-5.2meq/l, Cl-100meq/l and CRP 35mg/l. C-ANCA and P-ANCA were within normal limits. Random blood sugar was 121 mg/dl. Patient was found to be Hepatitis C positive. CT scan of nose and paranasal sinuses was done which revealed chronic sinusitis of right maxillary sinus (Figure 1).

Figure 1: CT scan showing chronic sinusitis of right maxillary sinus.

Patient underwent left cortical mastoidectomy with tympanoplasty along with right FESS under general anesthesia. Intraoperatively, mastoid antrum had thickened unhealthy mucosa. Handle of malleus, long process of incus and stapes superstructure were found eroded. Tympanomeatal flap was elevated three-fourth from 12 O'clock to 9 O'clock position. Pale granulations and unhealthy middle ear mucosa along with mucosa from mastoid antrum were sent for histopathological study. Temporal fascia graft was reinforced with cartilage and placed by underlay technique. Right uncinectomy and wide middle meatal antrostomy was done in the same sitting. Unhealthy granulations and mucosa from maxillary sinus was removed and sent for histopathology. Histopathology report was suggestive of tuberculosis (Figure 2 and 3).

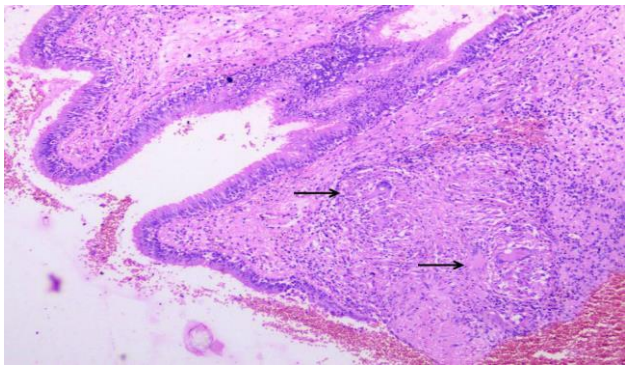

Figure 2: Nasal mucosa covered by respiratory epithelium. The underlying stroma shows several granulomata; H and E 40x.

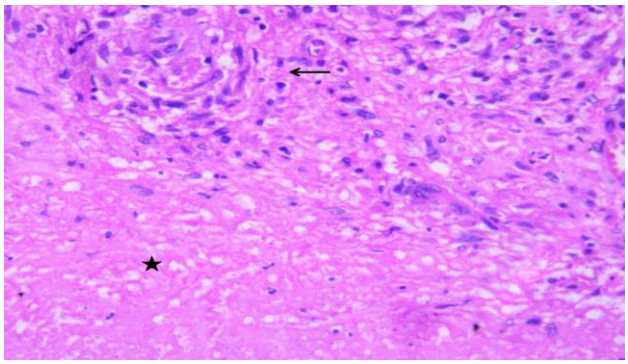

Figure 3: Mucosa showing granuloma (arrow) with caseation necrosis (star); H and E 400x.

On the basis of histopathology, the patient was referred to tuberculosis centre where the patient was found to be sputum positive for acid fast bacilli (AFB). Patient was started on antitubercular therapy (ATT). He responded well to the treatment. The graft was taken up. The patient showed considerable improvement in nasal signs and symptoms at 6 months follow up. The patient wanted to wait for surgery of the other ear.

DISCUSSION

Nasal tuberculosis was first reported by Giovanni Morgani in 1761. Involvement of nasal cavity and paranasal sinuses is a rare entity, probably due to self-protection afforded by ciliary movements, bactericidal effects of secretions and mechanical filtration provided by vibrissae.[5] Very few cases of tubercular maxillary

sinusitis have been reported in literature. Maxillary sinus is a frequent location in TB of paranasal sinuses.[6] Extra-pulmonary tuberculosis involving ENT sites may be difficult to demonstrate even when the possibility of this disease is raised, at times only response to ATT confirms the etiology.[8] A high index of suspicion is required because of rarity of disease and similarity in clinical presentation with infective and non-infective conditions like leprosy, fungal infections, other granulomatous conditions like Wegner granulomatosis and even neoplasms.[9] Pathogenesis of otorhinolaryngeal TB is thought to be either secondary to tubercular focus in the lungs or elsewhere by haematogenous transportation or it may be primary infection by transmission through infected droplets expectorated by a smear positive patient.[1,7]

Most commonly TB of nose presents with nasal discharge, stuffiness of nose, crust formation and sometimes epistaxis, as was observed in the present case.[2] In our case, there was concomitant involvement of middle ear in the disease process. Tubercular otitis media always poses a challenge because preoperative procedures for diagnosing the disease are infrequently performed due to rarity, ambiguous clinical presentation and false negative results.[10]

As the patient was found to be sputum positive, it appears that involvement of middle ear and maxillary sinus was secondary to the pulmonary focus. On the basis of direct anatomical communication between nasal cavity, middle ear and pulmonary passages, secondary involvement of both maxillary sinus and middle ear by direct inoculation from the AFB positive sputum, appears to be the more logical mode of transportation of infection than hematogenous or lymphatic spread in this case.

While signs and symptoms observed in such cases do not confirm tubercular lesions on the basis of clinical manifestations alone and definite identification of mycobacterium is not easy to achieve, therefore pathological findings are increasingly taking an important role in diagnosis. Tuberculous otitis media should be considered in the patients with ear infection presenting with painless ear discharge, hearing loss disproportionate to the extent of disease, sensorineural hearing loss and facial palsy which are unresponsive to routine antibiotic therapy. Presence of pale granulations, as observed in otoscopy should raise a strong suspicion in favor of tubercular infection. Role of surgical intervention is to obtain valid diagnostic specimens and therapeutic options to deal with expected complications.

CONCLUSION

Extra-pulmonary TB is a rare condition and it is even rarer when it, concomitantly, involves two otorhinolaryngeal regions. A case of tuberculosis of maxillary sinus with simultaneous involvement of middle ear is reported to elucidate the clinical characteristics of an extremely rare association. When granulations are found in the middle ear or nasal cavity, possibility of tuberculosis should always be kept in mind to ensure early diagnosis and treatment. Diagnosis is ascertained mainly by histopathological observations.

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