

Case Report

Tubercular otomastoiditis presenting with Citelli's abscess

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ABSTRACT

Tuberculosis (TB) of the temporal bone is a rare condition. Tubercular otomastoiditis presenting with Citelli's abscess, facial nerve palsy and extensive bone destruction is an unusual condition. As far as we know this maybe the first reported case with the above diagnosis. A 26 year old male patient presented with chronic right ear discharge, decreased hearing and right side facial nerve palsy with tender fluctuant swelling in the right post aural region approximately 10×8 cm in dimension, posterior to the mastoid tip and extending into the occipital region, almost reaching up to the midline posteriorly. High resolution computed tomography (CT) scan of temporal bone and magnetic resonance imaging (MRI) of brain was done. He underwent right side mastoid exploration and drainage of the abscess under general anaesthesia. The specimens sent for investigations revealed acid fast bacilli suggestive of *Mycobacterium tuberculosis* and the patient was started on anti-tubercular therapy. In all cases of long-standing chronic otitis media (COM) especially in those with complications, possibility of TB should be ruled out. High index of suspicion is needed for early diagnosis and treatment and to prevent dreaded complications in such patients.

Keywords: Tuberculosis, Temporal bone, Otomastoiditis, Citelli's abscess, Chronic otitis media

INTRODUCTION

In COM especially in those with complications, TB should be ruled out. High index of suspicion is needed for early diagnosis, treatment and to prevent dreaded complications in such patients.

TB of the temporal bone is a rare condition constituting about 0.3-0.9% of all cases of COM and 4% of all head and neck TB.^{1,2} The incidence is lower in the present era due to the mass coverage of BCG vaccination and effective antituberculosis treatment.³ The initial symptoms and signs are non-specific. The causative agent is *M. tuberculosis* in most cases. Other non-tubercular mycobacteria like *Mycobacterium bovis*, *M. fortuitum*, *M. avium* can also cause TB of temporal bone.¹ The pathogenesis of TB of the temporal bone can occur due to entry of the pathogen by following routes: direct entry of pathogen through perforated tympanic membrane,

ascending infection via the eustachian tube and haematogenous spread, haematogenous spread is most common.^{1,4,5} Usually presents with chronic otorrhoea which is refractory to the usual antibiotic management. In this case report, tubercular otomastoiditis was presented with Citelli's abscess which was a rare entity.

CASE REPORT

A 26 year old male patient presented with recurrent right ear discharge since 5 years of age. The ear discharge was thick purulent, foul smelling and not blood stained, associated with decreased hearing. He developed deviation of angle of mouth towards left and inability to close right eye for the last two years which worsened in the last one month. He had painful swelling in right side post aural and occipital region for 1 month which increased in the last one week. He had fever in the preceding one month which was mainly at night,

associated with night sweats. He did not have any symptoms of vestibular dysfunction on presentation. The patient had decreased hearing on left side for one month. The patient had TB meningitis 2 years ago for which he received anti-tubercular therapy for a period of 9 months.

On examination, the right external auditory canal (EAC) was oedematous with purulent discharge. On examination under microscope, thick cheesy material was covering the tympanic membrane. He had lower motor neuron type (LMN) facial nerve palsy of grade 6 on right side. He had tender fluctuant swelling in the right post aural region approximately 10×8 cm, posterior to the mastoid tip and extending into the occipital region, almost reaching up to the midline posteriorly. Left ear had large central perforation. The facial nerve function was normal on left side. Pure tone audiometry was done, which revealed 81.6 dB (air conduction threshold) on right side and 53.3 dB (air conduction threshold) on left side. Bone conduction thresholds were normal on left side and it could not be done on right side because of the tender swelling. Figure 1 demonstrates the Citelli's abscess.



Figure 1: (A) Post aural and occipital swelling showing Citelli's abscess from lateral view; (B) posterior view; note the location of the swelling.

High resolution computed tomography (HRCT) of temporal bone was taken which revealed soft tissue density in the right mastoid region extending into the middle ear. Figure 2 A and B demonstrates the CT findings.

MRI of the brain and temporal bone with contrast was done. It revealed T1 hypointense and T2 hyperintense soft tissue density measuring 5×4.5 cm in dimension with peripheral rim enhancement on contrast administration in the mastoid air cell system. Magnetic resonance venography (MRV) revealed non-visualization of right sigmoid sinus probably due to compression by the collection in the mastoid air cell system. Figures 2 C and D demonstrates the MRI findings.

The patient was empirically started on broad spectrum injectable antibiotics. Right sided mastoid exploration and incision and drainage under general anaesthesia was done. Intra-operatively the Citelli's abscess was drained by making a linear incision over the most fluctuant site.

Around 30 ml of foul-smelling pus was drained. The loculi was broken by blunt dissection. Separate post-aural incision was given and mastoid cortex was exposed. Middle ear was filled with cheesy material and pus with granulation tissue. Intraoperatively no ossicles were visualised and there was erosion of tegmen antri, sigmoid plate, posterior fossa dura, lateral semi-circular canal and cochlea (promontory region). There was also extra-dural abscess which was drained via the mastoidectomy cavity. The second genu of the facial nerve and the vertical segment was covered with granulation tissue which was left in-situ. The eustachian tube orifice was found to be obliterated. Canal wall down mastoidectomy and disease clearance was done. Partial mastoid cavity obliteration was done with conchal cartilage and temporalis fascia was grafted over the cavity and middle ear cavity (Figure 3). Conchomeatoplasty was done. Wound was closed in layers leaving the Citelli's abscess cavity open. The patient's ZN staining revealed acid-fast bacilli suggestive of *M. tuberculosis* and culture sensitivity revealed *Pseudomonas aeruginosa* and *Enterococcus species*. Patient received intravenous antibiotics for a total period of 14 days and he was also started on anti-tubercular therapy. On follow up, the facial nerve function improved to grade 4 on right side.

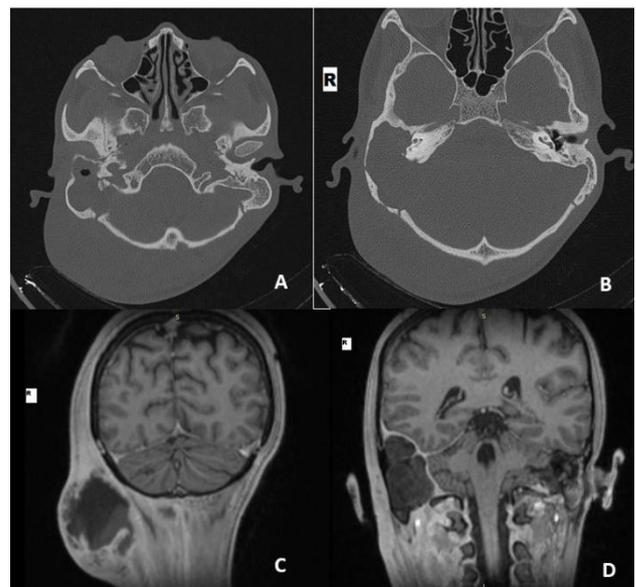


Figure 2: (A) Axial section of HRCT demonstrating completely erosion of mastoid air cells and ear ossicles; (B) axial section of HRCT showing erosion of semi-circular canals, cochlea, fallopian canal and sigmoid plate; tegmen antri erosion was also seen; note the soft tissue swelling in the right occipital region; (C) coronal section of MRI showing right side post aural and occipital collection measuring around 8×3 cm in dimension in the subcutaneous plane with peripheral rim enhancement and incomplete septae; (D) coronal section of MRI showing collection in the mastoid system reaching into the extradural space with maintained dural plane.

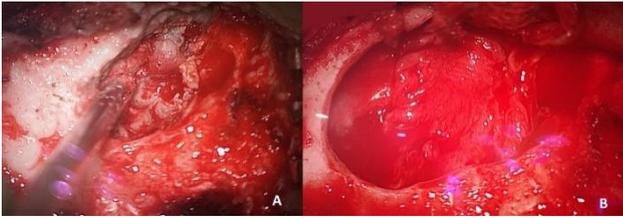


Figure 3: (A) Mastoid cavity filled with cheesy material; (B) mastoidectomy cavity grafted with temporalis fascia.



Figure 4: Clinical picture depicting facilia palsy.

DISCUSSION

TB constitutes around 8 million cases worldwide every year.^{1,3} TB of the temporal bone is a rare condition amounting to less than 1% of all cases of COM. The incidence maybe higher in places where TB was endemic like countries of Asia and Africa.⁶ When TB of the temporal bone occurred it usually presented in children less than 12 years of age.⁷

History of exposure to TB maybe seen in upto 50% of patients. The classical presentation of multiple perforations of tympanic membrane was not seen nowadays. Usually the TB of the temporal bone presented with non-specific symptoms and signs. These symptoms and signs included chronic ear discharge which was painless and associated hearing loss. Ear discharge will be purulent and will not respond to the usual antibiotic therapy. Perforations were initially small and multiple which eventually coalesced to form a single

large central perforation. Patient had hearing loss which was usually conductive. This hearing loss was disproportionate to the clinical findings. Some patients also presented with sensory neural hearing loss or mixed hearing loss. Around 10-20% of patients with TB of temporal bone also presented with facial nerve palsy and it occurred early in the course of the disease.^{1,8} In some literatures the incidence of facial nerve palsy was reported as high as 15-40% of TB otomastoiditis, more commonly in children.⁹

Citelli's abscess was less frequently described in literature and the original description was given by Citelli in 1901.¹⁰ This abscess was located posterior to the mastoid tip over the mastoid and occipital region. This abscess spread from the mastoid tip along the digastric muscle or sternocleidomastoid muscle and can in turn spread to longissimus and splenius muscles of the neck.¹⁰ As far as we know this maybe the first reported case of TB of the temporal bone which presented with Citelli's abscess and facial nerve palsy with extensive bone destruction. The antitubercular therapy formed the mainstay of treatment in TB of the temporal bone, however, prompt surgical intervention was needed when there was abscess formation or facial nerve involvement.⁹

The usual CT findings of TB temporal bone was soft tissue density with relatively preserved mastoid air cell system. Scutum was usually preserved.^{11,12} However in advanced cases there was extensive destruction of the mastoid air cell system with possible involvement of inner ear structures.¹ These extensive destructive changes were seen more in TB of the temporal bone than in cholesteatoma of the mastoid. It had been described in literature that the diagnosis can be delayed by 14 to 70 days from presentation.¹³ Due to the high index of suspicion TB should be ruled out like in this case we worked up for TB. It had been described that a negative HPE did not rule out extrapulmonary TB.¹³

A positive swab for culture sensitivity for TB was seen in less than 20% of cases. HPE of tissue bits like granulation tissue, aural polyp was considered as the gold standard for diagnosing TB of the temporal bone. It can have a false-negative rate of around 10%.^{1,11} Non-specific symptoms and signs delayed the diagnosis of TB of the temporal bone. The problems with the current diagnostic tests added to the delay in diagnosis. In this case scenario a relatively early diagnosis of TB was made within 5 days of presentation and antitubercular treatment was initiated.

CONCLUSION

In all cases of long-standing COM, TB should be ruled out. In patients from any endemic region for TB suffering from COM with intra-temporal or extra-temporal complications, those with history of TB in the past or contact with a positive case, tubercular involvement of the temporal bone should be suspected. High index of

suspicion is needed for early diagnosis and treatment and to prevent dreaded complications in such patients.

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