

## OTOGENIC BRAIN ABSCESS IN A CHILD OF THIRD WORLD COUNTRY - A SINGLE STAGE TRANSCRANIAL TRANSMASTOID APPROACH: A CASE REPORT

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### ABSTRACT

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Brain abscess, though not rare, is an uncommon complication of otitis media. We report a case of 12 years old male for chronic ear discharge, throbbing headache and post aural swelling for three weeks. A detailed history and physical examination of the child was performed and a Magnetic Resonance Imaging (MRI) scan was done. A diagnosis of an intracranial abscess, secondary to the chronic otitis media was made. An emergency craniotomy with drainage of brain abscess was planned and performed by the Neurosurgeon. Otolaryngologist performed mastoidectomy, in the same setting. After the surgery, post-operative management was done and the patient was discharged, uneventfully. The complete management in a single sitting of primary cause and resulting complication with no added expenses is the necessity of a poor country citizen.

### KEYWORDS

Mastoidectomy, Otogenic abscess, Transmastoid, Brain abscess

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## INTRODUCTION

Acute and chronic otitis media can cause intratemporal and intracranial complications. Intracranial complications include meningitis, brain abscess, epidural abscess, subdural empyema and lateral sinus thrombosis. These conditions are potentially dangerous and even fatal. The incidence of these abscess has decreased due to early diagnosis of complications and the development of new antibiotics. However, mortality due to these complications is still high. Nonetheless, the exact timing of abscess drainage and the optimal method for approach remain controversial.<sup>1</sup>

Currently, most neurosurgery literature dictates that drainage via burr holes or complete lesion excision (including the abscess capsule) represent the gold-standard for surgical intervention followed by mastoidectomy.<sup>2-4</sup>

Mastoidectomy is an operation to eradicate disease of the attic and mastoid, both of which are exteriorized into the external auditory canal with or without removal of the posterior meatal wall.<sup>5</sup>

Here we present the successful management of an otogenic brain abscess presenting with chronic ear discharge and severe throbbing headache using a single stage, trans mastoid approach and discuss the techniques and its specific advantages.

## CASE REPORT

A 12-year-old male patient presented with swelling in the post aurial region of 3 weeks duration which was insidious in onset, painless, rapidly increasing in size. He had a history of left ear discharge for 2 years which was scanty, mucopurulent, foul smelling, non blood stained with no known aggravating factors. Headache was insidious in onset, gradually progressive, mainly in temporal region, aggravated in the morning which didn't relieve even after taking medications. There was no history of vertigo or tinnitus. Patient was afebrile. His vitals parameters were stable. ENT examinations revealed atticointral disease in left ear. CNS examination was normal. Ophthalmological examination did not show any visual field defects or papilledema.

Routine blood investigation showed within normal limit. MRI scan head revealed a small left temporal lobe abscess with edema and poorly formed capsule (Figure 1) Emergency surgical intervention was then scheduled as soon as the diagnosis was confirmed to resolve the ongoing severe headaches, post aurial swelling and to prevent other complications like facial nerve palsy.

With the coordination between neurosurgery and ENT team, the surgical procedure was done. Neurosurgeon did craniotomy simple burr holes for drainage of abscess with repairment of dural defect with the free edges of bone hinged on the intracranial aspect followed by ENT surgeon who performed mastoidectomy. There was erosion of the mastoid cortex with cholesteatoma and granulations in the antrum, mastoid tip and sinodural angle (Figure 2). During removal of the disease, the infective tract in continuation with the abscess was identified.

After surgical intervention, antibiotic therapy (intravenous ceftriaxone) was maintained. Patient had an uneventful postoperative period. The patient was discharged without neurologic sequelae on ten days after surgery. On follow up after 2 weeks later, all evidence of the brain abscess including ear discharge, severe throbbing headache had entirely disappeared. (Figures 3 and 4)

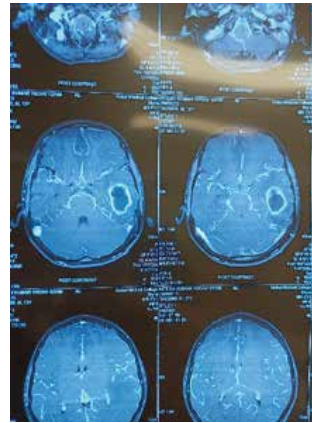


Figure 1. MRI Brain



Figure 2. Mastoid Cavity



Figure 3. Postoperatively Dry Ear



Figure 4. Postauricular healed scar

## DISCUSSION

Despite the development and progress in antibiotic therapy, otogenic brain abscess are still encountered as a serious complication of middle ear disease.<sup>6</sup> The main presenting symptoms in patients with this abscess was headache, vomiting and papilledema. It developed through four stages: stage of invasion, localization, enlargement and termination. The basic concepts in treatment of intracranial abscess of otogenic origin are to promptly decompress the abscess and eradicate the primary otogenic focus, prevent complications and reformation of the abscess. Otogenic brain abscess can be diagnosed with radiologic imaging (CT and MRI). Mafee, et al. highlighted the important role of radiologic modalities in diagnosing patients who were clinically suspected of having otogenic brain abscess.<sup>7</sup>

Singh and Maharaj advocated early mastoid surgery, either immediately or within after the neurosurgical procedure (under the same anesthesia). As a result of this change in treatment policy, the mortality rate declined from 36 to 13 per cent.<sup>8</sup> Following a similar ideology, we performed a single stage drainage with mastoidectomy of intracranial abscess to eradicate the primary focus in the same setting which helps to improved drastically.

Advantages of neurosurgical drainage of brain abscess prior to otologic surgery were suggested by Singh and Maharaj.<sup>9</sup> They emphasized the importance of urgent neurosurgical drainage to prevent the deteriorating mental state and mortality of otogenic brain abscess. Kurien et al in their study reported that if surgical procedures such as drainage of the brain abscess is done earlier, prognosis of the patient will improve.<sup>10</sup> On the contrary, the advantages of immediate otologic surgery with evacuation of the abscess through the mastoid cavity were suggested.<sup>11</sup> Single stage, transmastoid drainage of intracranial abscess showed the low morbidity and mortality rate combined with a shorter hospital stay, with less burden economically to the poor citizens of third world country.<sup>12</sup>

In this case, radiological imaging detects brain abscess. Neurosurgical drainage was performed. Modified Radical Mastoidectomy was done by ENT surgeon to eradicate the primary source of the infection. Following surgical intervention, the brain abscess was markedly decreased.

## CONCLUSION

Here, we reported a rare case of brain abscess with chronic ear discharge with severe throbbing headache. Compared to the other modalities for therapeutic intervention, the single stage drainage and mastoidectomy approach has the advantages in eradicating the source of infection additionally providing to decrease the mortality and morbidity arising from this pathology. It also has less burden economically. As such, we conclude that otogenic abscess can be effectively managed through cooperation between the neurosurgeon and otorhinolaryngologist.

## CONFLICT OF INTEREST

None

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