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Case Report

Brain Abscess: A Case Report

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Abstract
This report describes a male adult who developed brain abscess following craniotomy associated with ear infection. Following identification of Pseudomonas aeruginosa as the underlying bacterial infection, proper medical management was started. The patient was recovered and discharged from the hospital.

Introduction

Brain abscess continues to be a problem in neurosurgery, and associates with morbidity and mortality even in the antibiotics and computed tomography (CT) era.[1] The management of bacterial abscess still remains a controversial subject. We report a case of a male adult who had brain abscess following craniotomy associated with ear infection.

Case

A 23-year-old male presented in the emergency Department of our hospital with a chief complaint of headache on right temporal region since one month associated with vomiting and fever which was present since one and a half month. He also had a history of right ear discharged on and off since two years for which he had not received any treatment.

Physical examination was unremarkable. Magnetic resonance imaging (MRI) revealed empyema along the right tentorium in superior part of vermis with right cerebellar edema with enhancing soft tissue in right mastoid and middle ear cavity. Cerebrospinal fluid (CSF) analysis revealed increased CSF pressure, WBC 250/mm^3 [2-4/ mm^3], protein 420 mg/dl [2-40 mg/dl], glucose 45 mg/dl [40-80 mg/dl]. Serum WBC 15.68 $x10^3$/µL, neutrophils 62%, prothrombin time was 16.4 seconds (increased). Alanine aminotransferase increased to 58 µ/L and viral markers were negative. Renal function tests were normal.

The patient was then shifted to neurosurgery ward. Further ENT opinion was done which suggested the history of ear discharge on and off since two years and on examination of right ear, yellow foul smelling profuse discharge was present and tympanic membrane was not visualized.

Empiric treatment with intravenous ceftriaxone, metronidazole and dexamethasone was initiated. Then, the patient was operated with retromastoid suboccipital crainiotomy and burrhole. Abscesses drainage was done.

Pus culture and sensitivity of the abscess was sent to microbiology, which revealed the presence of *pseudomonas aeruginosa*, sensitive to

ceftazidime, tobramycin, pip/tazobactam, penicillin, meropenem and resistant to imipenem following which, the patient was shifted to the above-mentioned antibiotics. Later, the patient started improving, and discharged for follow-up in neurosurgery department.

Discussion

Brain abscess is a focal, intracerebral infection that beginsas a localized area of cerebritis and develops into a collection of pus surrounded by a well-vascularized capsule.[2] *Pseudomonas aeruginosa* was the etiological agent in the patient, which is a rare causative agent for the brain abscess.

The most common source of microbial infection remains direct or indirect cranial infection arising from the Para nasal sinuses, middle ear, and teeth. Seeding of the brain presumably occurs via transit of infecting bacteria through the valveless emissary veins that drain these regions and permit either director retrograde flow into the venous drainage systems of the brain. Although dental and sinus infections remain an important source of brain abscess, aggressive and widespread therapy of chronic otitis media has led to a corresponding decrease in the incidence of otogenic-related temporal lobe and cerebellar brain abscess. The patient had previous history of ear infection, and current examination showed yellow colored foul discharge. A study reported 57% mortality in the patients with brain abscess who had pseudomonas infection.

Classically, penicillin G and chloramphenicol were the antimicrobials of choice in the treatment of abscess. The emergence of antibiotic resistance and the development of agents with improved tolerability have led to a shift in preferred agents over the past several decades. Our patient was given ceftazidime, tobramycin, tazobactam, penicillin, and meropenem. Following the antibiotic treatment, the patient recovered and discharged from the hospital.

Conclusion

Abscesses rarely arise *de novo* within the brain[5]. There is almost always a primary lesion elsewhere in the body that must be treated instantly, failure to treat the primary lesion will result in relapse and extension of the infection to the brain. Pseudomonas aeruginosa is a rare cause of brain abscess but in our case report it is the causative agent.

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