

Right Skull Base Osteomyelitis: A Case Report

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Abstract:- Right skull base osteomyelitis is a life threatening condition which mainly affects the external otitis with the involvement of temporal bone. It is most commonly caused due to the bacterial infection and rarely, a fungal infection. *Pseudomonas aeruginosa* and *zygomycetes* are the pathogens responsible for the disease progression. It is most frequently found in elderly patients with uncontrolled type 2 diabetes mellitus. Clinically, patient may present with the complaints of cranial nerve palsies, facial paralysis, ear pain, dizziness, and headache. Right skull base osteomyelitis can be diagnosed from the patient's medical history, laboratory parameters and radiological investigations. The current case describes such an instance in a 72 year old male patient who was admitted to the neurology department with the complaints of right ear pain, deviation of angle of mouth to left side and difficulty in closing right eye for the past 1 month. The patient had a history of type 2 diabetes mellitus, systemic hypertension and chronic kidney disease. Based on the clinical manifestation and CT scan, the patient was diagnosed with right skull base osteomyelitis caused by *Aspergillus flavus* infections. The progression of disease is ameliorated with the help of antifungal therapy and also adopted necessary measures to correct the underlying risk factors.

Keywords:- Skull Base Osteomyelitis, External Otitis, Temporal Bone, Facial Paralysis, Cranial Nerve Palsies.

I. INTRODUCTION

Right skull base osteomyelitis is a life threatening condition which mainly affects the external otitis with the involvement of temporal bone with a mortality rate of 10 - 20%^[1,2]. The condition was first introduced in 1959 by Meltzer and Keleman^[1]. It is most frequently seen in elderly patients with uncontrolled type 2 diabetes mellitus and immunocompromised patients^[3]. The most common etiological factors responsible for the progression of disease are bacterial infection (*Pseudomonas aeruginosa* 75-95%) and rarely by a fungal infection which carries a worse prognosis compared to bacterial infection due to the delay in diagnosis^[1,3,4]. Skull base osteomyelitis is a soft tissue infection which mainly originates from the external auditory canal and disperses via the fissures of Santorini and the tympanomastoid suture with the involvement of cranial base^[3].

Skull base osteomyelitis can be diagnosed based on the clinical manifestation which includes otalgia, facial pain, headache, cranial nerve palsies, facial paralysis and dizziness^[1]. Other diagnostic parameters (ESR, CRP,

Leukocyte counts), microbiological and radiological investigation (CT, MRI).

The long term intravenous broad spectrum antibiotic therapy was considered as the main treatment for the skull base osteomyelitis, caused due to the bacterial infection. Aminoglycoside, β -lactamase antibiotics, a third generation cephalosporins, or an oral quinolone ciprofloxacin are the commonly prescribed antibiotics for ameliorating bacterial skull base osteomyelitis. High dose amphotericin B is recommended for treating the fungal infection which is not commonly used because of its toxicity. In such cases, alternative treatment was liposomal amphotericin B, which has lower toxicity and equal efficacy to amphotericin B^[5].

II. CLINICAL PRESENTATION

A 72 year old male patient was admitted in the neurology department with the complaints of right ear pain, deviation of angle of mouth to left side and difficulty in closing right eye for past one month. The patient was conscious oriented and afebrile. His vitals were found to be normal, past medical records showed that he had a known complaints of T2DM, SHTN and CKD. In laboratory investigations, ESR level was elevated. Various other investigations which was undergone by the patient are as follows:

- Microbiological testing: Indicates the presence of *Aspergillus flavus* in ear swab.
- CT scan – Ear: Right middle ear cavity and mastoid air cells shows mixed soft tissues with mild sclerosis of mastoid air cells and blunting of scutum.

Based on the laboratory parameter, microbiological testing and radiological investigations, the patient was diagnosed with right skull base osteomyelitis caused by *Aspergillus flavus*. Treatment advised was T. Voriconazole 300 mg. Voriconazole is a broad spectrum azole that can distribute throughout the body including soft tissues and bone and is the preferred treatment for Aspergillosis.

III. CONCLUSION

Right skull base osteomyelitis caused by a fungal infection (*Aspergillus flavus*) is a rare condition, which mainly affects the external otitis. The fungal pathogen responsible for the condition should be diagnosed as soon as possible by sending the ear swabs and middle ear aspirates for the culture testing. Delay in diagnosis can lead to the development of complications. There is no specific treatment algorithm for treating this life threatening condition, but the most preferred therapy for the eradication of fungal infection is Voriconazole as it is safer and well tolerated drug of choice.

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