

CASE REPORT: DIAGNOSIS AND MANAGEMENT OF NECROTIZING OTITIS EXTERNA

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ABSTRACT

Necrotizing Otitis Externa (NOE), also known as Malignant Otitis Externa (MOE), is a rare infection of the ear canal characterized by frequent bone erosion. This life-threatening condition affects the external auditory canal and skull base, with potential invasion into the stylomastoid and jugular foramina. Treatment typically involves antibiotic therapy, hyperbaric oxygen therapy, and surgical intervention. NOE has a lifetime prevalence of 10% and can manifest in acute, chronic, and necrotizing forms. A 72-year-old male was admitted with complaints of anxiety over the past two days and occasional cough. He has a medical history significant for Type II Diabetes Mellitus, Systemic Hypertension, Chronic Kidney Disease (CKD), and Coronary Artery Disease (CAD), and is currently receiving treatment for these conditions.

Key Words: NOE, MOE, CKD, CAD

INTRODUCTION

Malignant Otitis Externa is a rare and potentially lethal infection of the temporal bone, primarily affecting elderly diabetic patients. It begins in the external auditory canal and can extend into the temporal bone and adjacent structures [1]. Despite being non-cancerous, it can progress rapidly and is associated with a high mortality rate. The condition has a lifetime prevalence of 10% and can manifest in acute, chronic, and necrotizing forms [2]. The most common causative agents are gram-negative bacteria, particularly *Pseudomonas aeruginosa*. Elderly male patients with Diabetes Mellitus are particularly vulnerable, although other risk factors include HIV, malignancies, and chemotherapy [3].

NOE typically starts as simple otitis externa with soft tissue infection in the external auditory canal (EAC). From there, the infection spreads through fascial planes and venous sinuses, resembling otitis media, progressing through the pneumatic cavities of the temporal bone. This spread of infection leads to bone erosion and extension into adjacent tissues. As the condition advances, it can damage the base of the skull, cranial nerves, and intracranial structures [4]. The infection often spreads through the osteocartilaginous junction of the EAC and via the Santorini fissure, which opens into the cartilage on the lateral aspect of the EAC.

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Consequently, structures such as the stylomastoid and jugular foramina, as well as the hypoglossal canal, become compromised.

Infection in this area can lead to cranial neuropathy, presenting with clinical symptoms such as facial weakness, dysphagia, hoarseness, shoulder weakness, and tongue weakness. Advanced lesions may extend to involve the cavernous sinus, resulting in trigeminal paralysis and nerve entrapment. This progression often indicates a poor prognosis due to the multitude of potential nerve-related complications. Distension of the infratemporal fossa can cause stretching of retrocondyles, parapharyngeal fat, temporomandibular joints, and masticatory muscles responsible for chewing [5].

Treatment of Malignant Otitis Externa (MOE) is multifaceted and may include systemic and local antimicrobial therapy, strict glucose control, surgical debridement, and hyperbaric oxygen therapy. Surgical intervention becomes necessary when conservative treatments fail, typically involving procedures like local debridement, abscess drainage, or removal of bone sequelae[6].

CASE REPORT

Necrotizing Otitis Externa typically originates from the external auditory canal and can progress through stages of cellulitis, chondritis, periostitis, osteitis, and osteomyelitis. When the infection involves the bone, it is termed "Skull Base Osteomyelitis" [7]. Diabetes Mellitus is a significant risk factor due to its impact on vascular supply and tissue perfusion, predisposing individuals to infections in the temporal bone which can extend into the cranium, resulting in cranial nerve palsies. Facial nerve involvement is common initially due to the anatomical proximity to the temporal bone, and recovery from cranial nerve involvement is challenging for patients.

Intracranial complications, such as sigmoid sinus thrombosis, and treatment-related complications like long-term antibiotic therapy-induced bone marrow suppression, contribute to the complexity of managing this condition [8].

A case report by Sami Horani, Shiva P. Daram et al. detailed an 11-year-old male presenting with acute symptoms of right otalgia, purulent otorrhea, and swelling after exposure to a hot tub. Physical examination revealed purulence, erythema, edema, and tenderness along the ear structures. CT scan findings indicated soft tissue phlegmon, subcutaneous emphysema, gas along the pinna, and mastoid tip edema with bony changes consistent with Malignant Otitis Externa. Initial management included intravenous Meropenem due to bone involvement, followed by subsequent treatment adjustments with Meropenem, Clindamycin, and Amphotericin. The patient underwent multiple debridements and received long-term oral Doxycycline, resulting in significant clinical improvement. However, external auditory canal stenosis developed, necessitating ongoing management with MeroCel ear wick stenting and local treatments to maintain ear canal patency and function [9].

In another case report by Kaushik Guha, a seventy-year-old man presented with left-sided facial weakness and ear pain following travel. Imaging studies revealed mild cerebral atrophy, maxillary sinusitis, and mastoiditis. Nerve conduction studies confirmed axonal facial neuropathy on the affected side, diagnosed as Malignant Otitis Externa with grade VI Bell's Palsy according to the House-Brackmann Facial Nerve Grading System. The patient received medical treatment and physiotherapy for Bell's Palsy, including galvanic stimulation and mirror feedback exercises for facial rehabilitation [10].

Conclusion

Necrotizing Otitis Externa (NOE) is a challenging medical condition that demands specialized medical attention due to its often delayed diagnosis. Effective management requires clinicians to carefully evaluate clinical symptoms, signs, radiological imaging, and inflammatory markers. Elderly patients, especially those who are immunocompromised or diabetic, should be particularly monitored for NOE. This case report highlights the critical role of clinical suspicion, early intervention, and interdisciplinary collaboration in achieving optimal patient outcomes.

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