

## Malignant External Otitis, A Review on Some Important Clinical Notes

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### Abstract

Malignant external otitis or Necrotizing external otitis which usually occurs in adult patients in old ages whom suffering from diabetes, is an infection which is invasive and devastating in its nature. It occurs at the external auditory canal and also the base of the skull.

**Keywords:** external otitis; malignant; necrotizing; diabetes; old ages

### Introduction

Malignant external otitis or Necrotizing external otitis which usually occurs in adult patients in old ages whom suffering from diabetes, is an infection which is invasive and devastating in its nature. It occurs at the external auditory canal and also the base of the skull.

This short review tries to point to some important clinical notes about the malignant or necrotizing external otitis.

#### Body :

Malignant or necrotizing external otitis is an infection which is invasive and devastating in its nature and usually affects the adult patients with old ages whom are suffering from diabetes. External auditory canal and the base of the skull can be involved in this pathology.

The clinical picture of this pathology is typically a patient who is presenting with feeling of severe pain in the ear which is usually worse at night, some degrees of headache or feeling pain in the temporomandibular joint with ear drainage. This patient commonly suffers from diabetes and usually is in old ages. Otagia and otorrhoea are the most common symptoms.

Malignant external otitis is commonly known as a subacute infection which is progressive in its nature. So the affected patients present with a history of having symptoms for a period of time. Ear canal carcinoma, otitis externa and otitis media are other pathologies which should be differentiated from malignant external otitis.

In the studies which have been done about the patients with malignant external otitis, in most of the cases the infection with *Pseudomonas aeruginosa* has been found. *Staphylococcus aureus* and *Klebsiella* may also cause malignant external otitis but the percentage of the patients who have been infected with these pathogens, is much lower than ones who have been infected with *Pseudomonas aeruginosa*. Considering this, the *Pseudomonas aeruginosa* is the main cause of infection in most of the cases with malignant external otitis. [1,2,3]

Some other suppressive disorders of the immune system like hematologic malignancy and acquired immunodeficiency syndrome or the conditions like being under chronic treatment with corticosteroids like prednisone can also cause the patients to be prone to malignant external otitis.

Although the malignant external otitis in most of the cases would affect the older patients with diabetes, but it seems that poor diabetic control does not have any effects on the occurrence of the malignant external otitis. Considering this, it seems that the microvascular disease in the patients with diabetes makes them more susceptible to be affected by such infectious diseases like the malignant external otitis.

Elevation in the amount of moisture in the external ear canal and also the traumas which may affect the external ear canal can provide a good environment for the colonization of the *Pseudomonas*. Then the infection will spread through different ways and may involve various anatomical regions like mastoid, parotid gland, temporal bone specifically the petrous apex, temporomandibular joint and the jugular foramen at first. In case the infection can spread more, it can involve cranial nerves specifically the facial nerve since it is located near the ear canal. Usually at first, the infection would not affect the middle ear and eardrum but in case the infection would spread more and go into the advanced phase, it can involve the middle ear and eardrum either. [4,5]

Diagnosis of the malignant external otitis would be done based on imaging studies including CT and MRI and also pathological study of the tissue and culture. Erosion in the cortical bone at early stages of the disease can be detected by using the CT scanning while the bones medullary space changes and enhancing in the dura, can be studied better by using MRI. Since the MRI can determine the range of infection in a better way, it is the more appropriate neuroimaging study technique in the malignant external otitis cases.

C-reactive protein and erythrocyte sedimentation rate are elevated in the complete blood count study of the affected patients. Altered mental status

and fever which are the signs of the presence of systemic infection cannot be seen in common in the affected patients. In malignant external otitis, the soft tissue would block the external ear canal and due to this, conductive hearing loss can usually be seen in the affected patients. [6,9]

Treatment should be started after taking biopsy with using the empiric treatment strategy with antibiotics which have effects on *Pseudomonas* and also *Staphylococcus* until the specific organisms which are responsible for the occurrence of the infection can be found. Empiric therapy can be done with piperacillin-tazobactam, cefepime or a carbapenem.

Ciprofloxacin has also been used for empiric therapy in the past but since some newly appeared *Pseudomonas* are resistant to fluoroquinolones, now there are some controversies to use ciprofloxacin as an empiric therapy for the malignant external otitis.

In case culturing the specific organisms cannot be successful and get results, empiric therapy should be continued and the patients condition should be monitored precisely and regularly. In case culturing the pathogens can get results, the treatment will be continued based on those results.

As two examples, in case *Aspergillus* would be the pathogen, treatment with amphotericin B and voriconazole should be considered. In case the pathogen is among *Pseudomonas* and is sensitive to ciprofloxacin, treatment should be continued with ciprofloxacin. In case of the presence of any bone involvement or abscesses, surgical treatment will become indicated. Bone and granulation tissue's surgical debridement, should be considered in relevant cases.

It is important to consider close monitoring the patients condition and their response to treatment until the treatment strategies can get results. Recurrent of infection after treatment should always be considered in mind. As a result monitoring the patients after treatment completion is also of importance. [3,7,8]

## Conclusion :

It is important for the clinicians specifically ones who are dealing with the patients with head and neck pathologies and ones who are dealing with older patients who are suffering from diabetes either, to have knowledge about the malignant external otitis to approach the affected patients with more precision at the bedside.

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