

## **Management of Malignant Otitis Externa**

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**Objective:** The aim of this study is to present our experience with the management of Malignant Otitis Externa.

**Design:** Retrospective clinical study.

**Methods:** All patients' records with malignant otitis externa during last 6 years (1997-2003) were retrieved and reviewed. The following investigations were done: Diabetes Mellitus Profile (DM), Erythrocytes Sedimentation Rate (ESR), Ear Swab for culture and sensitivity (C/S), Computed Tomography (CT) and scintigraphy using technicium 99 and or Gallium 67.

**Results:** During the last 6 years (1997-2003), 9 patients with the diagnosis of Malignant Otitis Externa (MOE) were admitted to the ENT-ward at King Fahd Teaching Hospital for investigation and treatment. All cases except three responded to the antibiotic treatment. Patient with cranial nerve involvement (3) showed poor improvement. One of these patients expired due to carotid artery haemorrhage.

**Conclusion:** Malignant Otitis Externa is still a serious disease associated with cranial nerve complications and high plus Morbo-mortality rate. The best investigate tool is CT and isotope scanning. The most effective treatment are controlling of diabetics and for fighting infection with the proper antibiotic. Monitoring of therapy response is done through normalisation of ESR, control of DM and improvement of CT and radioisotope scanning. Long term follow up of patients is very important.

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Malignant Otitis Externa (MOE) is an uncommon life threatening disease that occurs in elderly diabetic patients. It is an invasive pseudomonal infection of the external canal and deep peri-auricular tissue that characteristically involves the bone and adjacent cartilaginous structures and may lead to osteomyelitis of the base of the skull<sup>1</sup>.

Malignant Otitis Externa may cause severe pain, necrosis of the external auditory canal and temporal bone leading to a progressive palsies of the cranial nerves. It presents usually with severe earache, purulent otorrhoea with granulation tissue formation and headache<sup>2</sup>.

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Immunodeficiency syndrome (Aids) patient could presents differently. It affects junge drug addicts, non diabetic and not necessarily being infected by pseudomonas or having granulation tissue<sup>3</sup>. Predisposing factors include immunologic abnormalities, dermatitis, medication, neoplasm, iatrogenic procedures and chronic infection of the ear canal<sup>3</sup>. Treatment of MOE has traditionally included antipseudomonal agents such as third generation cephalosporin and amino glycoside for long duration<sup>4</sup>. Surgery has rarely place in the treatment of MOE. The aim of this study is to present our experience with the management of Malignant Otitis Externa.

## **METHODS**

Over the last 6 years (1997-2003) 9 patients with the preliminary diagnosis of Malignant Otitis Externa (MOE) were admitted to the ENT ward at King Fahd Hospital of the University for investigation and further treatment. A detailed history was taken with special emphasis on previous medication and Diabetes Mellitus. This was followed by thorough ENT examination including cranial nerve, vestibular system and hearing assessment. The following investigations were requested: computed tomography (CT) of mastoid and temporal bone, fasting and random blood sugar, swab for culture and sensitivity (C/S), ESR monitoring during treatment and follow up, Scintigraphy (technicium 99 and Gallium 67) was done outside our hospital for patients with facial nerve palsy. Diabetic patients were put on sliding scale of insulin treatment. Intravenous antibiotic treatment using ciprofloxacin 200mg/bid or ceftazidime 1-2gm tid and aminoglycoside eardrops were given.

Patients were followed up for 3-6 months. Patients with facial N. palsy have been seen and followed up also by the Neurologist, Ophthalmologist and Physiotherapist.

## **RESULTS**

All patients (9) were male, their age ranged from 51-72 year (mean 61.5). The main complaint is severe throbbing earache specially at night in 9 cases. This was associated with purulent ear discharge in 8 cases, tinnitus in 6, vertigo in 1 and hearing loss in 9.

Granulation tissue was found in 8 and polyp in 1 with some edema, narrowing of canal and purulent discharge. Most of granulations disappeared and the discharge stopped after treatment.

Three patients presented with facial nerve palsy, one grade II and two grade V. Under treatment the grade II palsy showed good improvement, while the other two showed no improvement. One expired due to massive haemorrhage from the internal carotid artery.

Culture swabs showed pseudomonas aeruginosa in six patients, strep and enterococci in one, commensal in one and candida parasitosis in one. All nine patients responded very well to treatment and on discharge their cultures were negative.

ESRs ranged from 21-120 mm/hr on admission (mean of 70). Under treatment ESR gradually reached normal value at the day of discharge in 6 patients and remained unchanged in three.

In all patients, CT showed osteitis of the temporal bone, hazy mastoid bone boundaries and soft tissue shadow inside the mastoid air cells, in the middle ear and in EAC causing narrowing. There was soft tissue edema at the base of the skull specially the infra temporal region. Scintigraphy showed high tissue activity at the base of skull, temporal and mastoid bone. On discharge and during follow up they showed marked improvement.

On admission, all patients had uncontrolled DM with fasting blood sugar ranging between 154-548 (mg/dl). All had type II DM. On discharge 5 patients had normal blood sugar, while four patients remained uncontrolled. All patients were discharged on oral hypoglycemic drug. Hospitalization ranged from 7-32 days.

Patients were then discharged once their pain disappeared, DM is controlled, ear swab is negative, ESR back to normal and CT findings improved.

## **DISCUSSION**

Malignant Otitis Externa is a necrotizing infection of the external canal and surrounding tissue affecting usually elderly male diabetic patients<sup>1,2</sup>. All nine cases with MOE seen over the last 6 years in the ENT department were elderly (mean age 61.5), male with uncontrolled diabetes. This confirms the infrequency of the disease and the male dominance of the disease<sup>1,5,6</sup>. The single major complaints that led the patients to their doctor was the throbbing earache especially at night<sup>1,5,7</sup>; External canals were occupied with granulation tissues and purulent discharge, a fact which is documented clearly in the literature<sup>7,8,9</sup>. Our culture result is similar to Weinroth et al and Combacchio et al, where they found a mixture of *Pseudomonas aeruginosa*, *Staphylococcus epidermidis* and *Aspergillus fumigatus*<sup>10,11</sup>.

Three patients (33.3%) had facial nerve palsy grade II and V. The grade II showed good improvement and the grade V showed poor improvement. Al-Dousary et al reported a case of MOE with facial palsy, who showed good improvement under treatment<sup>2</sup>. Bath et al reported a case of MOE with optic neuritis, which improved only after the use of hyperbaric oxygen<sup>2</sup>. All patients had uncontrolled diabetes who received treatment during hospitalization and follow up – 3 patients were not controlled. Gaining control of diabetes should be considered the first line of treatment and the first step toward the total management of the patient<sup>5</sup>. Patient should if possible not leave the hospital without the control of their Diabetes as suggested by Driss et al<sup>6</sup>. Achieving control over diabetes is the first sign of response to therapy<sup>5</sup>.

All patients received ciprofloxacin, ceftazidime or meropenem parentally and was shifted to oral treatment before discharge. Gehanno 1994<sup>12</sup> analyzed 84 clinical case studies collected from 13 publications, in all ciprofloxacin was used in a dose of 750mg twice a day for 3 weeks with zero resistance and cure rate of 96.4%<sup>13</sup>. ESR has been noted to be markedly elevated in association with Malignant Otitis Externa, often in excess of 100 mm/hr and it is helpful not only in supporting the diagnosis, but also in monitoring the therapeutic response<sup>1,11</sup>. In the present study, 6 patients reached a normal value at the day of discharge and remained unchanged in 3 patients.

CT scan is the current modality of choice for defining the anatomical extent of the disease in MOE and it is not only useful to support the diagnosis but also have been proven to be accurate to monitor the effectiveness of therapy<sup>14-16</sup>. All patients were scanned preoperatively and during follow up, which proved to be an effective in diagnosis and to monitor therapy. It was demonstrated that radioisotope scan of technetium 99 and /or Gallium 67 could support the diagnosis, showing extension of the disease more precisely and monitoring the effectiveness of treatment<sup>1,11</sup>.

## CONCLUSION

**Malignant Otitis Externa is still a serious disease associated with cranial nerve complications and high plus Morbo-mortality rate. The best investigate tool is CT and isotope scanning. The most effective treatment are controlling of diabetics and for fighting infection with the proper antibiotic. Monitoring of therapy response is done through normalisation of ESR, control of DM and improvement of CT and radioisotope scanning. Long term follow up of patients is very important.**

## REFERENCES

1. Bath AP, Rowe Jr, Innes AJ. Clinical records malignant otitis externa with optic neuritis. *JLO* 1998;112:274-7.
2. Al-Doussary S, Attalah M., Al Rahab A, et al. Otitis Externa Malignant. A case report and review of literature. *Otolaryngol Pol* 1998;52:19-22.
3. Ress BD, Luntz M, Telischi FF, et al. Necrotizing External Otitis in patients with Aids. *The Laryngoscope* 1997;107:465-70.
4. Weinroth SE, Schessel D, Tuazon Cu. Malignant Otitis Externa in Aids patients: Case report and review of the literature. *Ear, Nose, Throat J* 1994;73:772-4.
5. Driss N, Mighrik K, Hassine M, et al. Malignant Otitis Externa (2 cases). *Tunis Med* 1993;71:541-5.
6. Meyerhoff W, Caruso VG. Trauma and infection of External Canal in Paparella and Shumrick editors. *Otolaryngology*, Philadelphia: WB Saunders, 1991:2792-3.
7. Evans P, Hofmann L. Malignant External Otitis: A case report and review. *Am Fam physician* 1994;49:427-31.
8. Ress BB, Luntz M, Telischi FF, et al. Necrotizing external Otitis in patients with Aids. *Laryngoscope* 1997;107:456-60.
9. Amorosa L, Modugno GC, Pirodda A. Malignant External Otitis. Review and Personal experience. *Acta Otolaryngol [suppl]* 1996;521:3-16.
10. Weinroth SE, Schessel D, Tuazon CU. Malignant Otitis Externa in aids patients: Case report and review of the literature. *ENT Journal* 1994; 772-8.
11. Combacchio F, D' Eredita R, Biron E, et al. Follow up of necrotizing external Otitis. *Acta Otorhinolaryngol* 1993;13:517-24.
12. Gehanno P. Ciprofloxacin in the treatment of malignant external otitis. *Chemotherapy* 1994;40[suppl]:35-40.
13. Louie TJ. Ciprofloxacin: An oral quinolone for the treatment of infection with gram-negative pathogen. *CMAJ* 1994;150:664-76.
14. Mendelson DS, Som PM, Mendelron MH, et al. Malignant Otitis Externa: The role of computed tomography and radionuclides in evaluation. *Radiology* 1983;149:745-9.
15. Gold, Som PM, Lucente FE, et al. Radiographic findings in progressive Necrotizing malignant external otitis. *Laryngoscope* 1984;94:363-6.

16. Munoz A, Chamorro ME. Radiology in Focus; Necrotizing external otitis caused by *Aspergillus fumigatus*: Computed tomography and high resolution magnetic resonance Imaging in an AIDS patient. JLO 1998;112:98-102.