The Journal of Laryngology and Otology
August 1988. Vol. **102.** pp. 713–714

Clinical Records

Necrotizing otitis externa
(A new aid to management)

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Introduction

Chandler (1968) reported thirteen cases of severe and often fatal infection of the external ear, caused by Psuedomonas Aeuroginosa which affects mainly elderly diabetics. Otologists ever since have been increasingly aware of this condition called malignant (or necrotizing) otitis externa.

The infection spreads to the bones of the base of the skull and adjacent soft tissues and may cause mastoiditis. Involvement of the facial and other lower cranial nerves usually indicates a bad prognosis and high morbidity and mortality. The condition may be unilateral or bilateral and spread across the mid line of the skull has been reported (Chandler, 1968; Strauss *et al.*, 1982).

Early diagnosis and wide surgical debridement of the infected tissue, together with combination therapy of a aminoglycoside (Gentamicin) and Carbenicillin, have vastly improved the prognosis of this condition (Myerhoff *et al.*, 1977).

However, relapse is common and it is advised that antibiotic therapy is prolonged to prevent further recurrence. This in itself may be expensive and inconvenient.

We present the history of a patient who relapsed after initial control of the disease by wide surgical debridement and five months combination of intravenous Gentamicin sulphate and Azlocillin.

After relapse Gentamicin sulphate beads were implanted into the mastoid cavity and adjacent defect. The result was successful in that there was no sign of recurrence of the disease nine months after this procedure. The use of gentamicin beads has not been previously reported in this condition.

Case report

A 66-year-old diabetic woman was referred to the ENT Department with a ten-week history of severe pain and discharge from her left ear which had failed to respond to topical Gentamicin drops. She was a poorly-controlled diabetic who had been treated with insulin for 25 years and had many previous admissions to hospital for stabilisation of her diabetes.

Examination of her left ear revealed a profuse purulent discharge and an ear canal occluded with granulations. There was a partial weakness of the facial nerve.

She was admitted for investigation. Mastoid X-rays showed no significant abnormality. Significant findings included a raised ESR of 83mm/hr and an elevated blood sugar. Culture of the pus produced a heavy growth of Pseudomonas Aeruginosa.

Four days after admission her left mastoid was explored under general anaesthetic. The post-auricular soft tissues were found to be very oedematous and there was wide necrosis of the cartilage of the external auditory canal and osteitis of the mastoid tip. There were copious pale granulations which surrounded the facial nerve and extended medially with adjacent osteitis to the lateral border of the jugular foramen. A wide debridement of infected bone and granulations was performed and the resulting cavity was packed with gauze impregnated with Gentamicin solution. Histology revealed chronically inflammed granulation tissue and necrotic cartilage from the external auditory canal. The cavity was re-packed daily with gauze impregnated with Gentamicin until it healed. She was treated with intravenous Gentamicin and Azlocillin for thirteen weeks with appropriate monitoring of serum levels to ensure satisfactory and safe levels. Intravenous therapy was stopped when she was symptom-free but her ESR had only dropped to 38 mm/hr.

A month after cessation of treatment her left ear became painful and there was softening under the post-auricular scar. The ESR had risen to 55 mm/hr.

Her left ear was re-explored and further granulations were seen along the base of the skull. These were removed with adjacent new osteitic bone. Gentamicin beads, totalling three in number, were implanted into the cavity. She made a very satisfactory recovery and her ESR had reduced to 26 mm/hr five weeks later. She was reviewed regularly and at the time of her death nine months later, from a stroke, there had been no evidence of recurrence of the disease.

Discussion

Gentamicin bead implantation has been used extensively in bone and soft-tissue infections. Grieben (1981) reported a success rate of over ninety per cent in 1,500 cases. He suggested that among the reasons for failure were residual sequestra and other osteo-synthetic material. He therefore advised wide debridement of the infected area as well as implantation of gentamicin beads.

Strauss *et al.* (1982) have shown, in decalcified temporal bones that islands of infected bone can be found beyond areas of normal bone. Evans and Richards (1973) also noted similar foci of osteomyelitis within intact bone and postulated haemotogenous spread of infection within the bone.

Total surgical removal of all infected bone is most unlikely and a method of providing high concentrations of antibiotic in the infected region is important. Local slow-dissolving beads of Gentamicin provide this by diffusion into the surrounding tissues. Their use is safe in the elderly diabetic who constitute the majority of patients suffering from malignant (necrotizing) otitis externa.

Summary

We found the implantation of Gentamicin beads a simple and very inexpensive method for long-term management of

https://doi.org/10.1017/S002221510010622X Published online by Cambridge University Press

malignant (necrotizing) otitis externa. It not only cuts the cost of treatment and shortens the length of stay in hospital but is equally free of potential complications associated with prolonged parenteral Gentamicin therapy.

References

Chandler, J. R. (1968) Malignant otitis externa. *Laryngoscope*, **78:** 1257-1293.

Evans, I. T. G. and Richards, S. H. (1973) Malignant (necrotizing) otitis externa. *Journal of Laryngology and Otology* **87:** 13-20.

Grieben, A. (1981) Treatment of bone and soft tissue infections with gentamicin-polymethyl-methacrylate chains. South African Medical Journal, **60:** 395-397.

Meyerhoff, W. L., Gates C. A. and Montalbo P. J. (1977) Pseudomonas Mastoiditis. *Laryngoscope*, **87:** 483-492.

Strauss, M., Aber, R. C., Connor, G. H. and Baum, S. (1982) Malignant External Otitis: Long-term antimicrobial therapy. *Laryngoscope* **92:** 397-406.

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https://doi.org/10.1017/S002221510010622X Published online by Cambridge University Press