Introduction

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Chronic infections of the middle ear and sinuses, such as chronic otitis and chronic sinusitis, have a particular tendency to present recurrent purulent otorrhoea or rhi-norrhoea. In many cases a mixed population of bacteria is responsible for the infection. Resistance to conventional antibacterial agents is common. Malignant external otitis is a severe infection affecting patients who are usually elderly, diabetic or vascularly compromised; it presents serious therapeutic problems.

Pseudomonas aeruginosa, *Staphylococcus aureus* and *Proteus mirabilis* are the major pathogens implicated in chronic otitis. Malignant external otitis is almost exclusively caused by *Pseudomonas aeruginosa*. Organisms present in chronic sinusitis include *Haemophilus influenzae*, enterobacteriaceae, *pseudomonas*, *Staphylococcus aureus* and various streptococci species including *Streptococcus pneumoniae*.

None of the current standard therapies for these conditions can be considered ideal.

Aminoglycosides attain high levels within the tissues of the middle ear and are active against pathogens implicated in otitis. However, the use of aminoglycosides is limited by ototoxicity and the need for parenteral administration.

Amoxycillin/clavulanic acid is frequently prescribed in the treatment of acute exacerbations of chronic otitis because of its wide spectrum, despite its known resistance to *Ps. aeruginosa*. The addition of clavulanic acid to amoxycillin has increased the effectiveness of amoxycillin in infections caused by (3-lactamase organisms, such as *Haemophilus influenzae*, which are increasingly implicated in sinusitis.

Malignant external otitis is currently treated with a p-lactam antibiotic combined with an aminoglycoside for a period of 4–12 weeks. This treatment necessitates prolonged infusions and has been associated with nephrotoxicity and ototoxicity.

Ciprofloxacin, a quinolone antibacterial agent, shows good activity against the major causal bacteria for chronic infections of the middle ear and sinuses. Minimum inhibitory concentrations (MICs) are low, for example against *P. aeruginosa*, 0.5–1.0 mg/l; *S. aureus*, 0.5–1.0 mg/l; *P. mirabilis*, 0.03–0.12 mg/l.

Ciprofloxacin shows good bioavailability (60–80%) and efficient tissue penetration. In nasal secretion, it achieves concentrations of 60–90% of those in serum, and in sinus mucosa it reaches levels that are three times those in serum. In the main structure of the middle

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ear, ciprofloxacin also achieves tissue levels three times higher than simultaneous plasma levels. These concentrations are, in most cases, higher than the MICs against the major pathogens implicated.

This publication contains a selection of studies, which evaluate the efficacy and safety of ciprofloxacin in the treatment of these ENT infections. It includes two studies which compare ciprofloxacin with amoxycillin/clavulanic acid in the treatment of chronic sinusitis and chronic otitis. The article by Massias et al. clearly demonstrates the excellent penetration of ciprofloxacin into the tissues of the middle ear (middle ear mucosa and cortical bone of the mastoid process) of patients suffering from otitis. The publication concludes with a review by Gehanno on the use of ciprofloxacin in the treatment of malignant external otitis.

I trust this supplement will provide a valuable addition to the literature on the use of ciprofloxacin in chronic ENT infections, and that it will provide practical information for physicians confronted by these common and often difficult-to-treat conditions.

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