Pseudomonas otitis externa is a very severe form of ear disease and will often progress to otitis media. In many cases there are extensive ulcers affecting the ear canal, which lead to severe pain. *Pseudomonas* spp. are ubiquitous in the environment, they are opportunistic pathogens and often show a multiresistant antibiotic spectrum. Pseudomonas otitis requires very aggressive therapy to eliminate the organism in the face of often severe changes that constitute perpetuating factors. These factors also need to be addressed to optimise the chances of a successful outcome. The initial therapy must be followed by the investigation and treatment of the underlying primary disease to avoid a relapse. This article describes the author's approach to investigation and therapy of this painful condition.

**Key words:** *Pseudomonas* spp, otitis externa, antibiotic resistance

### Introduction

Cases of *Pseudomonas* otitis are amongst the most challenging patients clinicians are presented with in small animal dermatology. Severe pain can lead to non-compliance due to the difficulties of using topical therapy in a painful ear. Recurrence is common due to failure to treat patients long enough, use appropriate antibiotics in the correct fashion or use an effective cleaner. Additionally failure to identify and address predisposing, perpetuating primary factors and identify and reverse secondary changes in many patients contributes to repeated episodes of otitis. Treatment of these cases is also very expensive and as success cannot be guaranteed; for some patients surgery (total ear canal ablation with bulla osteotomy) may be the cheaper option. However, in this procedure the patient loses the affected ear, leading to complete or almost complete deafness and it is a major operation requiring a very competent surgeon and very good analgesia during the procedure and post operatively, with all of the financial implications.

### The organism

*Staphylococcus pseudintermedius, Malassezia pachydermatis and Pseudomonas aeruginosa* are amongst the most commonly implicated organisms in canine otitis externa and media (Cole et al. 1998). *Pseudomonas aeruginosa* are gram-negative organisms commonly found in the environment and often associated with soil or water. They are implicated in a large number of cases of chronic otitis externa in dogs. The organism often forms a biofilm, making treatment difficult and is often multiresistant to a number of antibiotics (Cole et al. 1998; Seol et al. 2002; Martin et al. 2000; Colombini et al. 2000). Selection pressure after use of enrofloxacin often leads to bacterial resistance to this antibiotic. However, in vivo, fluoroquinolones can sometimes still be effective if used appropriately.

On the other hand, in vitro susceptibility to gentamycin is often seen but not supported by treatment success in vivo. This may be due to aminoglycosides being rendered inactive by purulent discharge, conditions that are commonly found in patients with *Pseudomonas* otitis. Proprietary ear drops containing gentamycin are often oily, which may preclude them from penetrating deep into a usually very stenosed ear canal. Finally, volumes used to treat ears are often too small.

*Pseudomonas* spp. produce proteases, which can cause ulceration, making this condition very painful.

### Clinical signs

Patients with *Pseudomonas* otitis often present with signs of severe pain. There is commonly a distinctive unpleasant smell. Copious amounts of purulent material, white, black, brown or green in colour, can be seen in the affected ear (Figure 1). Head shaking, head tilt, pruritus, swelling, erythema, collapsed pinnae, ulceration and in some cases signs of otitis media, such as facial nerve paralysis, loss of balance or Horner's syndrome (Cole et al. 1998) can be seen. In some chronic cases, the patients also present with lethargy, anorexia and aggression.