

# Otitis: Tips You Can Use

Craig Griffin, DVM, DACVD  
Animal Dermatology Clinic  
San Diego, CA

## **Do a hearing evaluation**

It is important to establish if a dog with chronic otitis hears. First this often changes my approach to a case. If hearing loss seems permanent and non reversible then total ear canal ablations and bulla osteotomy become better treatment options. Hearing loss is the main side effect of the procedure and if this were not an issue I would spend less time and expense trying medical therapy. In addition hearing needs to be determined prior to ear flushing and medicating with topical medications when otitis media is likely. It always surprises me how often dogs have fairly apparent hearing loss or deafness and owners are not aware of it. This is especially common when there are multiple pets in the household. It is important to ask questions about response to doors, cars pulling up, being called when outside and localizing the sound, sound sleeping and anything else that will help determine if there is significant hearing loss. Sounds should be made in the exam room when the dog is not paying attention to the veterinarian. It is important to not just see the dog responded to the sound but did it localize where the sound was coming from almost immediately. A problem may occur if a near deaf or deaf dog is not recognized in the examination and then the owner is warned about deafness as a side effect to the deep ear flush and treatment being sent home. After the procedure the client pays attention and recognizes there dog does not hear well then blames the treatment when in fact the dog had been deaf prior to the treatment. Brainstem auditory evoked response (BAER) testing is a more accurate way of assessing the dogs hearing. This allows one to assess hearing threshold, the level of sound that each ear detects and stimulates a brain response. It is being used to assess hearing loss and ototoxicity. Unfortunately it is not readily available.

## **Dilating the ear for cleaning**

With proliferative end stage ears it is difficult to impossible to really get cleansers down the ear. To achieve this when the dog is anesthetized use the 3mm otoscope cone to dilate the ear and force the cone down as far as possible. An ear loop can be passed down the canal just past the tip of the cone and then the cone is filled with the cleanser and slowly pulled out. This will allow a layer of cleanser to be deposited on many of the folds as they fall back in place as the cone is removed.

## **Glucocorticoids**

Topical glucocorticoids are the most common prescription item used in treating ear disease. This makes sense when one considers the most common causes of chronic otitis are allergic diseases such as atopic disease or adverse food reaction, which is likely an allergic reaction. Even ear mites are known to stimulate an allergic reaction. In addition many cases of otitis become secondarily infected with bacteria or *Malassezia* and glucocorticoids at least topically are believed to improve the response to topical antimicrobial therapy. This has been shown in dogs with *Malassezia* otitis and is supported by the fact that most topical antibiotic ear products labeled for the treatment of otitis do contain a glucocorticoid.[1] Eliminating or decreasing inflammation in the ear canal is an essential component of treating secondary infections and often is also indicated as it helps control the primary allergic disease as well. What this means is most cases should be treated with some glucocorticoid and so the real question is when to you avoid using them. I really have come to where the only time I do not use glucocorticoids in otitis cases is when 1. Cleaning ears alone is effective, 2. Infections are not responding or 3. Ulcers are not healing even though the infections appear to be controlled.

Glucocorticoids available for topical use in veterinary products are, from generally the weakest to more potent, 1% hydrocortisone, 0.1% or 0.015% triamcinolone, 0.1% betamethasone, 0.1% dexamethasone, 0.1% fluocinolone acetonide and 0.1% mometasone furoate. The initial therapy or during acute exacerbations a potent topical glucocorticoid may be required, but once the inflammation or allergic reaction is controlled prophylactic or long term therapy should utilize the least potent topical glucocorticoid possible. Long-term therapy is safer with products containing 1.0% or .5% hydrocortisone. A topical triamcinolone product (0.015% triamcinolone spray (Genesis®, Virbac) that has reduced systemic absorption has been useful, particularly for pinna inflammation associated with allergic otitis. In cases of atopy or food allergy induced otitis externa, the pinna is frequently affected and should also be treated. Low dose dexamethasone 0.01 to 0.05% has also been formulated in hospital and used effectively for long-term control of allergic otitis or *Malassezia* otitis.

## **Combination therapy the key to killing organisms**

Combinations are the key to eliminating resistant bacteria. Three different topical agents, antiseptics, synergistic agents and topical antibiotics, may be used for the purpose of killing the resistant bacteria. When 16 *Pseudomonas* cases were treated empirically, 90% reported resistant responded to an topical containing the antibiotic the organism was supposedly resistant to and 83% responded when the empiric treatment was reported used for a sensitive strain.[2] The favorable response regardless of what the sensitivity says may have been due to the combination approach and use of the synergist Tris EDTA as well as the high concentration we achieve when

using topical antibiotics. Topical antiseptics include such ingredients as certain acids (acetic, boric, citric, lactic), alcohols, aluminum hydroxide, chlorhexidine (0.25% or lower concentration), povidone iodine, silver sulfadiazine and sodium chlorite. Micronized silver is the newest addition to our topical antibacterial solutions. Antiseptics kill organisms by methods other than antibiotics, generally are inexpensive ingredients and can work in conjunction with antibiotics. Resistance is generally not a problem though this may be changing which is another reason to employ combination therapy. Some ingredients that look promising for destroying biofilms are chlorhexidine, acetic acid, and tris EDTA, N-acetyl-L-cysteine and sulfhydryl compounds. In cases resistant to all antibiotics antiseptics may end up being the treatment of choice. The drawback to using antiseptics is they often need to have contact time in clean ears and be used multiple times a day for a good effect. Some are also irritating which limits their use. The antiseptic should be left in the ear canal for 5 minutes. In difficult cases that are being cleaned under sedation/anesthesia then I may leave acetic/boric acid in the ear canal for five minutes then follow with a five-minute soak with Tris edta/chlorhexidine. When antiseptics are the only topical antibacterial used then they often should be applied 4-6 times a day.

Synergistic agents improve the killing effect of what they are mixed with in a way that is more than the additive effect of the two ingredients. Tromethamine-ethylenediaminetetra acetic acid (Tris edta) is the synergist used the most in veterinary otitis cases. It has been shown to enhance the effects of antibiotics as well as the low safe concentration antiseptic chlorhexidine (0.15%).[3, 4] Has been shown to be synergistic with tris EDTA.[3, 4] A very interesting agent is polymyxin as it is not only an antibiotic but also a synergistic agent. Polymyxin has a cationic detergent effect and similar to tris EDTA disrupts the outer membrane of bacteria, particularly gram-negative bacteria. It is synergistic with some other antibiotics but also has a synergistic effect with miconazole. When polymyxin is mixed with miconazole it is synergistic for killing *Malassezia* but also highly synergistic for the killing of *Pseudomonas*. [5] By combining synergistic agents with antibiotics even resistant strains of *Pseudomonas* are killed.

### **Repetitive ear flushes in clinic**

Since many chronic end stage ear cases will require multiple ear flushes in clinic it is common to encounter clients reluctant to do general anesthesia. Instead it is common to use sedatives and pain medication to allow some of the follow up ear flushes. In these cases even though the laryngeal reflex may be present it can be suppressed enough that care must be taken to prevent inhalation pneumonia. Those resistant *Pseudomonas* and MR *Staphylococcus* do not do well in the lungs. Remember any time an ear, with access to the middle ear, is being flushed in a sedated dog and an endotracheal tube is not in place the head should be angled down. We have the racks on the wet table raised at one end with the dog lying in lateral recumbency and the nose at the low end of the rack.

### **Malassezia in ears**

When dealing with possible resistant *Malassezia* then Posaconazole is reported to be more effective though it was not as potent as some papers described in one recent study. Miconazole is most often found at 1% but when dealing with difficult cases should higher concentrations such as the 2.3 percent or 1.7% would be more effective. Also polymyxin is synergistic with miconazole for killing *Malassezia*.

### **Follow up cytology**

Antiseptics, antibiotics or anti yeast topical therapy is not discontinued until reasonably normal self cleaning has returned and cytology shows no inflammatory cells or DNA strands. It is common for practitioners to discontinue therapy too early, especially if the ear looks reasonably good and there is no obvious odor or discharge. I see many cases when I think it is time to quit but based on cytology I do not. This is something else it is wise to warn owners to expect and if it does not happen they will be pleased and think you or they did a better job than usual.

### **References**

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