

FELINE EAR DISEASE : SO MUCH MORE THAN EAR MITES**Rod A.W. Rosychuk DVM, DACVIM****Colorado State University****ATOPY AND ADVERSE FOOD REACTION (FOOD SENSITIVITY) RELATED OTITIS EXTERNA (OE)**

The incidence of otitis seen in atopic and food sensitive cats is less than that seen in allergic dogs. In the author's practice, atopy related OE is significantly more common than that seen with food sensitivities. With atopy or food sensitivity, otic involvement may antedate the development of other cutaneous allergy signs, be concurrent with these signs, or may be the only clinical manifestation (i.e. ears the only area affected). Pinnal involvement is variable. In some individuals, it may predominate. Atopy or food sensitivity related otitis externa are usually bilateral, but may be predominantly unilateral. The degree of otic sensitivity (and pruritus) can be assessed by the severity of the aural-pedal reflex (response to swabbing the ears). The most common secondary infections are with *Malassezia pachydermatis*. Secondary bacterial infections most commonly involve *Staphylococci* (*pseudintermedius* and/or *aureus*). In the author's practice, atopic otitis externa is the most common cause of aural hematoma seen in the cat.

Diagnosis is by history and rule out (e.g. seasonality; rule out food sensitivity by restrictive diet trial).

Therapy for a "flare" of allergic (usually atopic) otitis usually involves topical medications that are intended to resolve infections, reduce inflammation and remove wax from the ear. When the tympanum is intact, combination products such as gentamicin/ clotrimazole/ betamethasone, Otomax, Merck) or neomycin/ thiabendazole/ dexamethasone, Tresaderm, Merial) can be used. Because the ear canals of the cat are relatively much shorter than in the dog, much debris from the ears can be shaken out, without the need for ear cleansers. However, any of the commonly used ear cleansers used in the dog are also used in the cat. The frequency of flushing is often not as aggressive as that used in the dog (e.g. in the cat, beginning once every other or every third day). Ear cleansers are often not started until 2-4 days after anti-inflammatory medications are started to facilitate greater tolerance to the flushing procedure. Because of the propensity of the cat to develop ototoxicity related to some of the ingredients in routinely used otic formulations, if the tympanum is not visible, consideration is given to using "safer" topical medications. These are mixes containing

enrofloxacin (22.7 mg/ml), dexamethasone sodium phosphate, 4 mg/ml and 1% miconazole (various sources).

1. For bacteria ((cocci) – enrofloxacin and dexamethasone spp. at a ratio of 1:2.
2. For bacteria (rods): flush the ear with a trisEDTA containing product (e.g Mal-A-Ket Otic, Dechra) 10 minutes before the enro.:dex.. Alternatively consider a mix of enrofloxacin (22.7 mg/ml) and TrizEDTA (Dechra) – enrofloxacin concentration of 10 mg/ml. Fill ear BID. If a steroid influence is necessary, consider systemic treatment.
3. For *Malassezia* : dexamethasone spp. and miconazole – 1:1
4. For bacteria and *Malassezia* : dexamethasone spp., enrofloxacin and miconazole) – ratio of 1:1:2.

Safer ear cleansers include dilute white vinegar and water (1 : 2 or 1 : 3 dilution); Mal-A-Ket (Dechra), Duoxo Micellar Ear solution (Sogeval).

Atopic otitis externa can often be successfully managed with adequate control of the underlying allergy. For atopy, the most successful alternatives include long term oral glucocorticoids, allergen specific immunotherapy (hyposensitization) or oral cyclosporine (5.0-7.5 mg/kg/day). As an alternative to systemic management of atopy or as an adjunctive therapy in those individuals who are not adequately controlled by systemic therapy, consideration can be given to chronic topical maintenance management:

1. Hydrocortisone containing product : e.g. Cort/Astrin®, hydrocortisone and Burrows solution, an astringent – twice weekly
2. 1:1 mix of 1% miconazole and dexamethasone sodium phosphate (4 mg/ml) once or twice weekly.

CERUMINOLITHS

These are concretions of wax and debris that fill the horizontal canal, in front of the tympanum. They are most commonly seen as a sequel to ear mite infestations or allergic otitis. This debris serves as a nidus for infection, is a source of irritation, prevents medication from reaching the deeper aspects of the ear canal and may perforate the tympanum.

Ceruminoliths are often difficult to remove with ‘at home’ flushing. They are best removed from the ears under general anesthesia. Pre-cleaning treatment with KlearOtic (22% squalene; Dechra; using an open ended tomcat catheter to deposit the KearOtic around the ceruminolith,) may facilitate removal with subsequent flushing, suctioning and the use of video otoscope guided “grabbing” forceps. Removal will also be facilitated through the use of video otoscope guided flushing, suctioning and ‘grabbing’ forceps.

IDIOPATHIC CERUMINOUS OTITIS EXTERNA

This is suggested to be an idiopathic seborrheic disorder, wherein excessive amounts of cerumen are produced within the ears. These accumulations may be associated with mild inflammation. This problem may predispose to secondary *Malassezia* and/or bacterial infections. At present, the author questions the existence of this syndrome and finds these to be low grade allergic ears and successfully manages them as such (see above).

DEMODICOSIS

A focal form of demodicosis may be restricted to the ears and manifest as an accumulation of large amounts of waxy debris. Pruritus and signs of discomfort are variable. Affected individuals usually do not have underlying immunocompromising diseases. The diagnosis is made by cytologic examination of ear swabs (debris in mineral oil). Therapy is with topical ivermectin in the ear (1:9 dilution of injectable 10mg/ml in mineral oil or propylene glycol; every other day), systemic ivermectin (0.3 mg/kg PO eod) or topical Tresaderm (Merial; q 24 hrs or BID) or amitraz (1 ml of 20% product in 30 ml mineral oil; eod).

FELINE CERUMINOUS CYSTS / CERUMINOUS CYSTOMATOSIS

Ceruminous cystomatosis is a non neoplastic disorder wherein ceruminous glands become cystic. These focal, blue colored lesions may be solitary or grouped and may originate anywhere from the tympanum, throughout the canals and over the medial pinnae and base of the ear. The concurrent presence of otitis externa does tend to worsen the clinical manifestations of this syndrome (more lesions, lesions larger), but otitis does not actually cause the lesions.

When ear canal cysts are small, they are usually not symptomatic. As they become larger or are present in groups they may become a predisposition to otitis by partially occluding the canal and resulting in the accumulation of debris. This produces a favorable microenvironment for yeast and bacterial proliferation. The ear becomes symptomatic with the development of these infections or if the lesion or lesions occlude the ear canal. With canal occlusion, debris accumulating behind the lesions may eventually perforate the tympanum and accumulate within the middle ear. There is some suggestion that some cases may proceed to the development of ceruminous adenocarcinoma.

In the presence of a concurrent, allergic otitis, control of the allergic and secondary infection components (e.g. chronic topical steroid /antibiotic/anti-fungal product) may reduce the numbers and size of lesions. However, most lesions are not resolved.

The most effective options for management include chemical cautery, surgical resection, cryosurgery or laser removal. Chemical cautery involves lancing the cyst with a needle or blade and using silver nitrate sticks on the lining. Only one treatment is usually necessary. Particular effort should be made to restrict the chemical to only the cyst lining and not surrounding normal skin. Surgical resection (specifically for cysts within the canals) involves the removal of as much of the cystic tissue as possible utilizing biopsy or grasping forceps. The removal of remnant material is facilitated by the use of biopsy forceps through a video otoscope. The ears are treated with a topical steroid containing product for 3-4 weeks following the procedure. The incidence of regrowth is variable. Laser removal of especially the base of the cysts is very effective for removing tissue and reducing the incidence of regrowth (medial pinnae and canals). Difficult to remove lesions or recurrent lesions may require ear canal ablation.

AURAL POLYPS

Polyps are most commonly noted in young cats (variably reported mean as 18 months or 6.0 years; range of 2.5 months to 18 years). Although most are unilateral, polyps can be bilateral. Most polyps appear to grow from the epithelial lining of the epitympanic cavity/tympanic cavity, then extend either through the tympanum in to the horizontal canal or down through the auditory canal in to the posterior pharynx. Although uncommon, it is possible to have polyps grow in both directions (about 10% of cases). By the time aural polyps move through the tympanum, polypoid tissue usually fills much of the rest of the middle ear. Once the tympanum is breached, secondary bacterial infections are relatively common. Histologically, polyps consist of a core of loosely arranged fibrovascular tissue with variable numbers and types of inflammatory cells throughout (lymphoplasmacytic; lymphoid aggregates/follicles; pleocellular inflammation). This core is covered by an epithelial layer that thickens with chronicity, producing a capsular effect. The etiology of polyps remains unknown. Attempts have failed to document the consistent presence of viruses in polyp tissue.

The current therapies of choice for the management of aural polyps include removal by traction/avulsion or removal by ventral bulla osteotomy. Traction alone results in an overall cure in about 60% of cases; surgery 97% of cases. A significant reduction in the incidence of

recurrence following traction has been noted in cats treated with oral prednisolone following traction removal. The authors management approach is as follows:

1. Under anesthesia, an open ended tomcat catheter is used to sample from deep within the horizontal canal (around the protruding mass) for cytology and culture and sensitivity testing. The ear is then thoroughly cleaned.
2. The capsule of the polyp is firmly grasped with biopsy forceps (Storz) either blindly or through a larger otoscope cone / surgical otoscope and pulled out. In many instances, the mass that comes out comes with a narrow stalk.
3. Residual polyp material (if readily visible) is removed down to the level of the tympanum (but not deeply in to the middle ear). Deeper tissue removal (to just inside the opening to the middle ear) is facilitated by utilizing biopsy forceps directed through a video otoscope.
4. Samples are again taken from the middle ear for cytology and culture and sensitivity testing. This and the sample from the horizontal canal are combined for purposes of culture.
5. If the hole through the tympanum is large and most of the polypoid material has come out of the dorsolateral chamber with traction, the middle ear is gently lavaged with saline.
6. Post avulsion topical therapy is dictated by cytology (see “safer” topical formulations in the “Feline Otitis Media” section of these Proceedings). Most commonly, this is a combination of enrofloxacin and dexamethasone sodium phosphate, 1:2 – BID for 1-2 weeks, then once daily for two weeks, then once every other day for two weeks. Post avulsion, the ear is flushed with dilute white vinegar and water (1:2 to 1:3) or another ear flush not associated with ototoxicity (e.g. Mal-A-Ket Otic, Dechra, Douxo Micellar Solution, Sogeval) once every other day or twice weekly.
7. Post avulsion, the cat is treated with oral prednisolone, beginning at 2-3 mg/kg/day for 2 weeks, then 1 – 1.5 mg/kg/day for 2 weeks, then 0.5 – 0.75mg/kg/day for 2 weeks, then 0.5-0.75 mg/kg once every other day for 2 weeks (6-8 weeks of therapy). Oral glucocorticoid therapy is considered mandatory and the likely reason for the success associated with this procedure.
8. Traction/avulsion may produce a Horner’s syndrome (usually resolves within 2 – 3 weeks).
9. The patient is rechecked every 2 weeks post avulsion to assess for resolution of secondary infections and healing of the tympanum.
10. Healing potential for the tympanum tends to vary. It is the authors impression that when the polyp exits the tympanum somewhere in the dorsal ½ of its surface area (which

is usually the case), the hole often does not heal. A persistent hole in the tympanum is, however, usually well tolerated. It is most problematic when the cat has a concurrent allergic otitis and accumulated debris can enter the middle ear through the opening. Such cases often require chronic topical therapy and/or systemic allergy therapy to minimize this complication.

The “secret to success” of this therapeutic attack is the post avulsion use of oral glucocorticoids. It is rare to see recurrences of aural polyps using this protocol (recurrence rate 3%?). Refractory cases are managed by ventral bulla osteotomy.

IDIOPATHIC PROLIFERATIVE AND NECROTIZING OTITIS EXTERNA

Highly characteristic syndrome often seen in young cats (kittens) starting as young as 2-6 months of age but also may be seen in older cats (reported in cats 3-5 years of age). Acute onset of well demarcated erythematous plaques with adherent thick, keratinous debris present on the medial aspect of the pinnae, the entrance to the vertical canal and, in some cats, in the periauricular regions of the face. As the lesions progress, erosion and ulceration occur. The otitis is often complicated by secondary bacterial and/or yeast infections. The otitis fails to respond to topical antibiotic/antifungal/steroid preparations (other than resolving secondary infections) and systemic glucocorticoids. Characteristic histopathology: severely hyperplastic epidermis and superficial follicular epithelium; striking parakeratotic hyperkeratosis with intermingled neutrophilic crusts; scattered dyskeratotic (apoptotic-appearing) keratinocytes present within the epidermis; superficial and perifollicular dermis is moderately to severely inflamed. Eosinophils and neutrophils are numerous and intermingled with lymphocytes, macrophages and plasma cells. The otitis may spontaneously resolve in some kittens within 12 to 24 months. In many individuals, the process persists. Some cats have been noted to respond to topical tacrolimus (0.1%; Protopic) (BID to start).