First it is important to understand feline otology is very different from canine otology. The cat has less breed variation in pinna shape and conformation as well as relatively short and straighter ear canal. The manubrium is also less curved than in the dog. The cat has a much different ventral tympanic bulla, which is divided by an incomplete septum that divides it into two communicating compartments. Dorsally the compartment is more lateral and ventrally more medial. A branch of the sympathetic nerve runs in this septum and when damaged results in Horner's syndrome. This septum is more readily damaged when flushing, cleaning or using instruments in the middle ear, which explains why Horner's syndrome is a much greater risk of complication in cats with otitis. The septum is concaved saucer shaped with the convex surface facing ventrally. Any fluid reaching the ventral compartment will have a much more difficult time being removed by positional changes or through the auditory canal. It is important to realize once medication reaches the middle ear it is more likely to stay and if irritating more likely to cause damage. Also the author feels cats do not do well with topical medications. They tend to induce irritation and hypersensitivity reactions more frequently than dogs. Therefore ear drops should not be used in cats.

Pinnal Diseases

The pinna can be affected by diseases processes which affect the skin generally. These include dermatophytosis, vasculitis, allergic skin disease, actinic keratosis, squamous cell carcinoma, and autoimmune diseases. Cats occasionally develop aural hematomas, usually as a result of irritation affecting the ear canal that results in scratching. Otodectes and notoedres are 2 common mites that can affect the ear pinnae and/or canals.

As a rule, otitis externa is less common in cats that dogs. However, young cats, outdoor cats and cats that live in colonies are commonly afflicted with *Otodectes cyanotis*, which results in an irritant/allergic otitis externa. A crusty black discharge is said to be characteristic, but a similar discharge can occur with other diseases of the external canal. All cats with otitis externa should be suspected of having ear mites until proven otherwise and the availability of modern, safe and effective products makes it worthwhile to treat tentatively for this disease even when mites are not detected. Direct visualization of mites is facilitated by the use of a video otoscope, which provides both excellent illumination, magnification and a good depth of field. Material should also be obtained from the ear canal for cytological examination, as some mites or eggs can be seen in smears when adult mites have been missed using otoscopy. Mites are large, pearly white, very active and are said to 'run away' from the light source, although this is not my experience. A variety of modern treatments are now available for treating *Otodectes* infections e.g., fipronil, ivermectin, milbemycin and selamectin. It is important to treat the whole cat, not just the ear canal, to repeat the treatment after three weeks, and to treat in-contact cats and dogs.
Occasionally, *Demodex catii* can cause parasitic otitis externa in cats. The diagnosis is made by microscopic examination of smears from the lining of the ear canal. Usually these cats have some underlying cause for immunosuppression, for example corticosteroid therapy or FIV infection. Treatment using topical or systemic therapy is generally successful. Bacterial otitis is rare in cats, but does occur, and should be treated using a combination of systemic and topical therapy. Systemic therapy is often easier in cats with irritated ears than otic therapy, and this is not cost-prohibitive as in larger canine patients. Occasional cats with allergic dermatitis will develop ceruminous otitis externa as a component of their atopy or food allergy/intolerance, and treatment should be directed at the underlying allergic condition.

**Otitis Media**

Otitis media is not-uncommon in cats, and typically results from an ascending infection up the auditory tube from the nasopharynx. Less frequently the infection occurs secondary to parasitic or bacterial otitis externa. Because otitis media is often noted concurrently with otitis externa, the clinical signs are as those seen with otitis externa (pruritus, head shaking, pain). When only otitis media is present (e.g. product of retrograde infection up the auditory canal), head shaking and pain may be noted, but neurologic signs are often seen as the only manifestation. In general, neurologic signs, which are estimated to occur in about 25% of the cases of otitis media in the dog, appear to have a higher incidence in the cat. They include Horner’s syndrome and facial paresis and paralysis. With concurrent inner ear involvement, there may be head tilt, horizontal nystagmus, asymmetric ataxia and deafness. It is relatively common to see concurrent middle and inner ear disease in the cat.

The diagnosis is often tentative, based on characteristic clinical signs and response to therapy. In some cases, radiographs of the tympanic bullae or CT of the head is used to confirm the anatomical diagnosis. Material for culture is sometimes obtained via myringotomy or via operative bulla osteotomy. Typically, otitis media is the result of bacterial infection with organisms that normally reside in the nasopharynx, such as *Pasteurella* species and obligate anaerobes. Acute cases often respond to a four to six week course of antibiotics based on culture and sensitivity. Some cases, however, require surgical drainage, through a bulla osteotomy or the external ear canal (via a myringotomy), to effect a cure.

**Feline Ceruminous Cysts / Ceruminous Cystomatosis**

Ceruminous cystomatosis is a non neoplastic disorder that is relatively commonly seen in cats. Ceruminous glands become dilated with a brownish secretory material. Although the secretions are brownish in color, grossly the lesions are a very dark blue. Lesions may be solitary or grouped and may originate anywhere from the tympanum, throughout the canals and over the proximal and medial aspects of the medial pinnae and base of the ear. The reason for cyst formation is not known. The average age of onset is 8–9.5 years, but individuals as young as 1 year of age may be affected. Abyssinian, Persian and domestic shorthaired cats are over-represented. It has been suggested that the lesions may be a sequel to otitis externa, a senile degenerative change or a congenital condition.
When ceruminous cysts are small, even in the ear canals, they are usually not symptomatic. As they become larger within the horizontal canal, 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.

Unless the lesions are occluding the canals, they are often tolerated and do not require therapy. 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 surgical resection, cryosurgery or laser removal. Surgical resection 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 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 re-growth. Difficult to remove lesions or recurrent lesions may require ear canal ablation to resolve the problem.

Ceruminous cystadenomas in the cat have an appearance that is very much like ceruminous cysts. Cystadenomas are cystic neoplasms arising from the secretory portion of the apocrine (ceruminous) sweat gland. They are most commonly seen on the head and pinna of cats, but occasionally may be seen in the canals. They are much less commonly encountered than are ceruminous cysts. Diagnosis is by biopsy. Therapy is as for ceruminous cysts (surgical removal, cryosurgery or laser removal).

**Inflammatory Polyps**

A polyp is a pedunculated, protruding growth that results from chronic inflammation. Depending on their growth pattern, they can grow through the auditory tube toward the nasopharynx or they may grow through the tympanic membrane. When found in the external ear canal, the enlarging polyp mass has created a permanent opening from the external ear canal to the middle ear. Usually the presence of a polyp is associated with secondary bacterial otitis media. There is copious mucus and pus produced in these cats. When examined, the external ear canal may show liquid exudates or there may be the presence of a wax covered mass at the eardrum. Flushing the ear canal thoroughly reveals the fleshy pink to red polyp protruding into the ear canal.

Current therapies of choice include removal by traction/avulsion or removal by ventral bulla osteotomy. A significant reduction in the incidence of recurrence following traction has been noted in cats treated with oral prednisolone following traction removal. Glucocorticoids can be used at anti-inflammatory dosages (1–2 mg/kg/day to initiate therapy) over several weeks. It would appear that traction/avulsion alone is more effective for nasopharyngeal polyps. Patients with nasopharyngeal polyps are less likely to have radiographic evidence of polypoid tissue within the middle ear, suggesting that they may grow from the auditory tube and are more
completely removed with traction. Ventral bulla osteotomy is noted to cure the vast majority of cases.

**Proliferating Necrotizing Otitis**

This is a very rare syndrome that has been described in cats. It generally is seen in young cats and has been referred to as proliferative necrotizing otitis of kittens. Mauldin *et al* reported four cats and described two cases where the disease started at 3–4 years of age. The etiology is unknown and though there is usually secondary infection treatment with numerous antibiotic topicals and even systemic antibiotics has limited efficacy. Drug reactions have also been proposed based on the histopathologic changes of follicular apoptosis. This seems unlikely since discontinuing drugs in some cases has been unrewarding. Attempts at identifying papilloma virus or herpes have been negative. The lesions typically affect the concave pinna, orifice and vertical canal. There are sharply margined erythematous crusted plaques. When the crusts are epilated erosions and ulcers are present. Some cats may have some facial lesions as well. Diagnosis is made by biopsy as histopathology is striking with parakeratosis, follicular acanthosis with apoptotic dyskeratotic epidermal cells. Various degrees of folliculitis are present. The disease may slowly spontaneously regress over months though some cases persist for years. Some chronic cases showed dramatic responses to therapy with topical tacrolimus.

**Summary**

It is important to remember feline otology is different than canine otology. The pinnae can be affected by generalized skin conditions. In general, topical medications should be avoided. Otitis media in cats can often be treated successfully with systemic medications.