

Otitis Externa and Media

(Inflammation of the Outer and Middle Ear)

Basics

OVERVIEW

- “Otitis externa”—inflammation of the outer ear, including the ear flap (pinna), external ear canal and outside of the ear drum (tympanic membrane)
- “Otitis media”—inflammation of the middle ear, including the inside surface of the ear drum, bulla (tympanic cavity), bones (ossicles) and auditory tube
- The terms starting with “otitis” are descriptions of clinical signs; they are not specific diagnoses of a cause

SIGNALMENT/DESCRIPTION OF PET

Species

- Dogs
- Cats

Breed Predilections

- Pendulous-eared dogs, especially spaniels and retrievers
- Dogs with plentiful hair in their external canals—terriers and poodles
- Dogs with narrowing (known as “stenosis”) of the external ear canal—Chinese shar-peis, bulldogs
- Primary secretory otitis media—Cavalier King Charles spaniels

SIGNS/OBSERVED CHANGES IN THE PET

- At home, may note head shy, reluctance to open mouth, head shaking, scratching, bad odor from ears, pain, and a change in certain nerve functions if extended to middle ear (otitis media)

Otitis Externa

- Inflammation of the outer ear (otitis externa)—often secondary to an underlying disease; may see signs of underlying disease
- Inflammation—itchiness (known as “pruritus”) and pain that may lead to head shaking, rubbing or scratching the ears, and redness of the outer ear (known as “erythema”) and ear flap (pinna) with or without discharge in the outer ear canal; head shaking may lead to bleeding inside the ear flap (known as “aural hematoma”)
- Infection—discharge and scaling in the outer ear canal; may contain pus and frequently has a bad odor, may block the canal
- Long-term (chronic) inflammation of the outer ear (otitis externa) in dogs—may cause hardening of the ear



tissues (known as “calcification”); canal narrowing (stenosis)

- If only one ear affected, head will be tilted down to that side, and/or a head tilt to that side

Otitis Media

- Long-term otitis externa in dogs results in rupture of the ear drum (known as the “tympanic membrane”) in 71% of cases, and in inflammation of the middle ear (otitis media) in 82% of cases; long term inflammation and swelling of the external ear canal leads to narrowing (stenosis); debris deep to the eardrum may cause part to bulge out (when the veterinarian views with a scope); may change the color of the membrane; fluid from ear when the eardrum breaks may contain pus or blood or both; regional lymph nodes (glands) may be enlarged
- Pain upon opening the mouth; may have inflammation of tonsils or back of the mouth (tonsillitis and pharyngitis, respectively)
- Deafness

CAUSES

Primary Causes

- Primary causes are those factors that directly cause inflammation in the ear canal
- Parasites (causing inflammation of the outer ear [otitis externa])—ear mites (*Otodectes cynotis*), other mites (*Demodex*, *Sarcoptes* and *Notoedres*), and the spinose ear tick (*Otobius megnini*)
- Hypersensitivities—atopy (disease in which the pet is sensitized [or “allergic”] to substances found in the environment [such as pollen] that normally would not cause any health problems), food allergy, contact allergy, and generalized (systemic) or local drug reaction
- Foreign bodies—plant awns
- Persistent or recurrent otitis media and externa, or one-sided problems are suspicious for blockages in the ear canal—tumor or cancer, polyps/growths, foreign material
- Disorder in the normal replacement and shedding of skin cells (known as a “keratinization disorder”) and increased wax production—functional obstruction of the ear canal
- Hormone disturbances
- Autoimmune diseases (in which the immune system attacks the body's own tissues)—may affect the ear flap, and the external ear canal
- Primary secretory otitis media (such as in Cavalier King Charles spaniel)

Perpetuating Causes

- Perpetuating causes prevent resolution of the problem
- Bacterial infections—common; *Staphylococcus pseudintermedius* ; *Pseudomonas*, *Enterococcus*, *Proteus*, *Streptococcus*, *Corynebacterium*, and *E. coli* frequently reported; *Pseudomonas* most commonly cultured in inflammation of the middle ear (otitis media)
- Infections—often mixed with or entirely the result of the yeast *Malassezia pachydermatis*; other yeast (*Candida*) or fungal species are rarely present
- Progressive changes—thickening or enlargement of the tissue of the external ear canal, leading to narrowing (stenosis); enlargement of the glands that secrete wax with increased secretion and reduced clearance, scar tissue and cartilage calcification—these cause treatment-resistant inflammation of the outer ear (otitis externa); prevent return to a “normal” ear canal even with proper treatment
- Inflammation of the middle ear (otitis media)—can act as a reservoir for disease-causing organisms if infection not cleared, leading to recurrent infections of the outer ear (otitis externa)
- Fungal/yeast include species of: *Malassezia*, *Candida*, rarely others
- Bacteria include species of: *Staphylococcus*, *Pseudomonas*, *Enterococcus*, *Proteus*, *Streptococcus*, *Corynebacterium*, *E. Coli*; *Pseudomonas* common in otitis media

RISK FACTORS

- Abnormal or breed-related conformation of the external ear canal (such as narrow canal, heavy hair growth in the ear canal, and pendulous ear flaps) restricts proper air flow into the canal
- Excessive moisture (such as from swimming, bathing or frequent/overzealous ear cleanings with certain ear products) in the ear canal can lead to infection
- Reaction to medications applied to the ear directly (known as “topical ear medications”) and irritation and trauma from abrasive cleaning techniques

- Underlying generalized (systemic) diseases produce abnormalities in the ear-canal environment and immune response

Treatment

HEALTH CARE

- Outpatient, unless pet has severe changes

ACTIVITY

- No restrictions

DIET

- No restrictions, unless a food allergy is suspected

SURGERY

- Indicated when the ear canal is severely narrowed or blocked, or when a mass is diagnosed
- Severe, medical treatment-unresponsive inflammation of the middle ear (otitis media) may require surgery to drain the middle ear (procedure known as “bullae osteotomy”) or to remove part of the outer ear (known as “ear ablation”)

Medications

- Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive

EAR CLEANING SOLUTIONS

- Choice depends on whether the eardrum is intact or not; astringents, anti-infective parasite agents, ear wax softeners, antiseptics, Tris-EDTA and plain saline solution are some choices your veterinarian will select from based on the individual case
- Sedation may be required for ear flushing, repeated cleansing will be done at a tapering frequency during therapy

SYSTEMIC TREATMENT

- Medications given by mouth, by injection, or by application to the body; a swab to determine what cells/organisms are in the ear discharge will be done to help determine the best therapy; 4-6 weeks of therapy will be done if otitis media or severe otitis externa (or both) are present
- Antibiotics—useful in severe cases of bacterial infection/inflammation of the outer ear (otitis externa); necessary when the ear drum (tympanic membrane) has ruptured; antibiotics include cephalosporins, amoxicillin-clavulanate, chloramphenicol, or clindamycin if bone involvement; for some other types of bacteria: enrofloxacin, marbofloxacin, amikacin, ticarcillin, imipenem, ceftazidime; require bacterial culture and sensitivity of the discharge in the ear to determine antibiotic selection if recurrent
- Medications to treat yeast or fungal infections (known as “antifungals”)—use in conjunction with topical treatment; examples are ketoconazole, fluconazole, itraconazole
- Steroids—reduce swelling and pain; reduce wax production; anti-inflammatory dosages of prednisone; used sparingly and for short duration, tapered; examples prednisolone, dexamethasone, triamcinolone
- Medications to kill parasites, such as topical ivermectin, selamectin, and moxidectin

TOPICAL TREATMENT

- Medications applied to the ear canal directly
- Topical therapy is very important for resolution and control of inflammation of the outer ear (otitis externa)
- Completely clean the external ear canal of debris; complete flushing under general anesthesia may be necessary, especially for uncooperative pets or severe cases, including those with inflammation of the middle ear (otitis media)
- Continue frequent cleanings until signs resolve and then routinely to maintain control
- Apply appropriate topical medications frequently and in sufficient quantity to completely treat the entire ear

canal, as per the veterinarian's instructions

- Suggested topical medications include antibiotics (such as gentamicin, neomycin, amikacin, enrofloxacin, silver sulfadiazine) or antifungal drops (such as miconazole, clotrimazole) for yeast or fungal infections, with or without steroids (such as dexamethasone, fluocinolone, betamethasone, triamcinolone, hydrocortisone, mometasone)
- Parasiticides—use when presence of organism(s) has been confirmed; for example, ivermectin 0.01% (Acarexx Otic Suspension®)—FDA-labeled to treat ear mites (*Otodectes cynotis*)

Follow-Up Care

PATIENT MONITORING

- Follow-up examinations and evaluations of ear discharge can assist in monitoring clearing of infection

PREVENTIONS AND AVOIDANCE

- Routine ear cleaning at home, as directed by your pet's veterinarian
- Control of underlying diseases

POSSIBLE COMPLICATIONS

- Uncontrolled inflammation of the outer ear (otitis externa) can lead to inflammation of the middle ear (otitis media); deafness; vestibular disease (abnormality in which the pet's sense of balance is altered); inflammation of the tissues under the skin that tends to spread (known as “cellulitis”); facial nerve paralysis; progression to inflammation of the inner ear (known as “otitis interna”); and rarely inflammation of the brain and its surrounding membranes (known as “meningoencephalitis”)
- Vestibular signs (due to an altered sense of balance) are not uncommon in cats following ear canal flushing; these signs may persist

EXPECTED COURSE AND PROGNOSIS

- Inflammation of the outer ear (otitis externa)—with proper therapy, most cases resolve in 3–4 weeks; failure to correct underlying primary cause often results in recurrence
- Perpetuating factors (such as narrowing of the ear canal and calcification of the cartilage of the ear) will not resolve and may result in recurrence
- Inflammation of the middle ear (otitis media)—may take 6+ weeks of systemic antibiotics until all signs have resolved and the ear drum (tympanic membrane) has healed
- Infection and inflammation of the bones (known as “osteomyelitis”) of the ear may require 6–8 weeks of antibiotics
- Vestibular signs (due to an altered sense of balance) usually improve within 2–6 weeks (some signs may not clear)

Key Points

- The proper method for cleaning and medicating ears is very important; talk to your pet's veterinarian so you understand the procedure and frequency of ear cleaning and the correct method to medicate the ears (especially the amount of medication to administer)

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