

Otitis Media and Interna

(Inflammation of the Middle Ear and Inner Ear)

Basics

OVERVIEW

- Inflammation of the middle ear (known as “otitis media”) and inner ear (known as “otitis interna”), most commonly caused by bacterial infection

SIGNALMENT/DESCRIPTION OF PET

Species

- Dogs
- Cats

Breed Predispositions

- Cocker spaniels and other long-eared breeds
- Poodles with long-term (chronic) inflammation of the ears (known as “otitis”) or the throat (known as “pharyngitis”) associated with dental disease
- Primary secretory otitis media (PSOM) is described in Cavalier King Charles spaniels

SIGNS/OBSERVED CHANGES IN THE PET

- Depend on severity and extent of the infection; range from no signs, to those related to middle ear discomfort and nervous system involvement
- Pain when opening the mouth; reluctance to chew; shaking the head; pawing at the affected ear
- Head tilt
- Pet may lean, veer, or roll toward the side or direction of the affected ear
- Pet's sense of balance may be altered (known as “vestibular deficits”)—persistent, transient or episodic
- Involvement of both ears—wide movements of the head, swinging back and forth; wobbly or incoordinated movement of the body (known as “truncal ataxia”), and possible deafness
- Vomiting and nausea—may occur during the sudden (acute) phase
- Facial nerve damage—the “facial nerve” goes to the muscles of the face, where it controls movement and expression, as well as to the tongue, where it is involved in the sensation of taste; signs of facial nerve damage include saliva and food dropping from the corner of the mouth; inability to blink; discharge from the eye; weakness (known as “paresis”) or paralysis of the affected ear and the eyelids, lips, and nostrils on the side of the affected ear; may have reduced tear production; with long-term (chronic) facial nerve paralysis, the face may contract or twist toward the affected side, caused by development of scar tissue in the muscles
- Unequal size of the pupils (known as “anisocoria”), the pupil is smaller on the side of the affected ear, protrusion



of the third eyelid, the eyeball is withdrawn into the socket (known as “enophthalmos”) and the upper eyelid droops (known as “ptosis”)—these signs are known as “Horner's syndrome”

- Evidence of redness of the ear, discharge, and thick and narrowed external ear canals indicates inflammation of the outer ear (known as “otitis externa”)
- Gray, dull, opaque, and bulging eardrum (known as the “tympanic membrane”), observed during examination using an otoscope to look down into the ear canal—indicates some type of fluid buildup in the middle ear
- Dental tartar, inflammation of the gums (known as “gingivitis”), of the tonsils (known as “tonsillitis”), or the throat (pharyngitis)—may be present and associated with inflammation of the middle ear (otitis media) and inner ear (otitis interna)
- Enlargement of the mandibular lymph node on the side of the ear inflammation (known as “mandibular lymphadenopathy”)—may occur with severe infections
- Superficial loss of tissue on the surface of the cornea, the clear outer layer of the front of the eye (known as a “corneal ulcer”)—may be caused by inability to blink or a dry eye
- Signs associated with damage to nervous system structures depend on the severity and location
- Pet may be reluctant to move and may stay in a crouched posture with wide movements of the head, swinging back and forth with damage of the vestibular portion of cranial nerve VIII
- Short, rapid movements of the eyeball (known as “nystagmus”); eye may be out of position when neck extended (vestibular strabismus)
- PSOM in Cavalier spaniels is due to heavy mucus accumulation in the middle ear

CAUSES

- Bacteria—primary disease-causing agents (examples include species of *Streptococcus*, *Proteus*, *Pseudomonas*, *Pasteurella*, and *E. Coli*)
- Yeast (*Malassezia*, *Candida*) and fungus (*Aspergillus*)—possible disease-causing agents
- Mites—increase likelihood of secondary bacterial infections
- Foreign bodies (such as grass awns, foxtail, spear grass)
- Trauma,
- Polyps, and tumors (such as fibroma, squamous cell carcinoma, ceruminous gland carcinoma, and primary bone tumors)
- Overzealous cleaning of the ear

RISK FACTORS

- Recurrent ear infections
- Inflammatory masses that develop from the middle ear or eustachian tube (known as “nasopharyngeal polyps”) and tumors or cancer of the inner, middle, or outer ear—may increase likelihood of bacterial infection
- Upper respiratory infections in cats
- Dental disease
- Vigorous ear flush
- Ear-cleaning solutions (such as chlorhexidine)—may be irritating to the middle and inner ear; avoid if the ear drum (tympanic membrane) is ruptured
- Inhalant anesthesia and traveling by airplane—change middle-ear pressures

Treatment

HEALTH CARE

- Inpatient—severe debilitating infection; nervous system signs and outpatient if stable and further testing or surgery pending, if indicated
- Fluid therapy—if pet is unable to eat or drink, due to nausea or vomiting and/or disorientation
- Coexistent inflammation of the outer ear (otitis externa)—bacterial culture and sensitivity testing; clean the ear; a suitable option is to use warm normal saline if the ear drum (tympanic membrane) is ruptured

ACTIVITY

- Restrict activity in pets with substantial alteration of sense of balance (vestibular disorder) to avoid injury

DIET

- Vomiting from alteration of sense of balance (vestibular disorder)—withhold food and water for 12–24 hours
- Severe disorientation—hand feed and water small amounts frequently; make sure sitting up on chest bone (sternal) to avoid aspiration pneumonia

SURGERY

- The veterinarian will not rely on severity of nervous system signs as an indication for surgical intervention; they will reserve surgery for pets with evidence of fluid buildup in the middle ear; infection/inflammation of the bone (known as “osteomyelitis”) surrounding the ear that is not responsive to medical management; and presence of inflammatory masses that develop from the middle ear or eustachian tube (nasopharyngeal polyps) or tumors/cancer
- Surgery may be indicated in some cases of inflammation of the middle ear (otitis media) to drain the middle ear cavity (procedure known as “bullae osteotomy”)
- Surgical removal of part of the outer ear (known as “ear ablation”)—indicated when inflammation of the middle ear (otitis media) is associated with recurrent inflammation of the outer ear (otitis externa) or tumors/cancer
- Samples will be obtained at time of surgery for microscopic examination of cells in the fluid, abnormal tissue and for bacterial culture and sensitivity of fluid in the middle ear

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

- Topical (applied directly into the ear) antibiotic solutions with saline or TrizEDTA base when eardrum rupture present—use treatment specific for the agent (bacteria, yeast, mites)
- Antibiotics—both topical and given by mouth or injection; long-term treatment (6–8 weeks); selection of antibiotics based on bacterial culture and sensitivity testing, if available
- Amoxicillin/clavulanic acid—good first choice antibiotic
- Fluoroquinolone or third generation cephalosporin antibiotics are good alternatives or can be used in combination, if bacterial culture and sensitivity test results are unavailable; examples include enrofloxacin (Baytril®), marbofloxacin (Zeniquin®), or cefpodoxime (Simplicef®)
- Clindamycin (Cleocin®) may be administered, if anaerobes are suspected; “anaerobes” are bacteria that can live and grow in the absence of oxygen
- Medications to decrease motion-type sickness or nausea—meclizine or maropitant may be necessary

Follow-Up Care

PATIENT MONITORING

- Evaluate after 10–14 days, or sooner if the pet's condition is deteriorating

PREVENTIONS AND AVOIDANCE

- Routine ear cleaning—may reduce chances of infection of the middle ear and inner ear
- Routine professional teeth cleaning, with the pet under anesthesia (known as a “dental prophylaxis”)—may reduce chances of infection of the middle and inner ear
- Eliminate ear mites
- Do gentle ear cleaning, avoiding pressure on the eardrum; avoid irritating topical products

POSSIBLE COMPLICATIONS

- Altered sense of balance (vestibular disorder), facial nerve damage or Horner's syndrome ; signs may remain
- Severe middle/inner ear infections—infection may spread to the brain stem; the brain stem is the part of the brain that is connected to the spinal cord that controls functions like breathing and heart rate; aggressive surgery and antibiotic therapy required
- Infection/inflammation (osteomyelitis) of the bone of the skull around the ear and fluid buildup in the middle ear cavity—commonly seen after severe, long-term (chronic) inflammation of the outer ear (otitis externa)
- Surgery to drain the middle ear (procedure is a bullae osteotomy)—postoperative complications include Horner's

syndrome, facial paralysis, and onset or worsening of an altered sense of balance (vestibular disorder), or deafness with infections involving both ears

EXPECTED COURSE AND PROGNOSIS

- Inflammation of the middle ear (otitis media) and inner ear (otitis interna)—usually responsive to medical management; 2- to 4-month course of antibiotics to avoid relapse
- Signs associated with an altered sense of balance (vestibular disorder)—improvement in 2–6 weeks; more rapid in small dogs and in cats
- When management of otitis externa not effective, surgical resection of the ear canal outside the ear drum may be required; improves chances of resolution for those patients

Key Points

- Most bacterial infections of the middle ear and inner ear resolve with an early, aggressive course of long-term, broad-spectrum antibiotics
- Relapsing signs may occur
- Surgical drainage of the middle ear may be necessary