



THE WINN FELINE FOUNDATION

For the Health and Well-Being of All Cats

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Feline Vestibular Disease

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Anyone who takes a fast spin on a merry-go-round can appreciate vestibular disease in a cat. Cats have a remarkable ability to stalk, hunt, run, and land on their feet with ease. This is due to coordination of the primary sensor system maintaining balance and normal body orientation relative to the earth's gravitational field. A disruption of this finely tuned nerve control can lead to a loss of equilibrium.

Common signs of vestibular disease are ataxia (lack of coordination or balance), head tilt, circling, falling to one side, nausea (motion sickness), strabismus (deviation of the eyeball), and nystagmus (back and forth, up and down, or rotary eye movements). The cat will usually fall, circle, or tilt the head toward the side of the body where the primary lesion is located.

When vestibular disease is suspected, it must be determined if it involves the inner ear (peripheral) or the brain stem (central). In addition, the signs can be unilateral (one-sided) or bilateral (both sides affected). Cats with bilateral peripheral disease appear weak because of a sense of disorientation; yet the muscles of their limbs have normal strength. If central vestibular disease is present, there will be deficits in such postural reactions as limb placing and proprioception (positioning), along with a diminished mental awareness (depression or decreased consciousness). A paradoxical form of central vestibular disease affects the opposite side of the body from the lesion. Evaluation for cranial nerve deficits may exhibit a loss of facial sensations or movements.

A common form of peripheral vestibular disease is otitis media or interna (middle or inner ear). Bacterial infections can result from an extension of disease in the external ear or the upper air passages by way of the auditory tube. Nasopharyngeal polyps and cancerous growths can be found in these same areas. Ear cleaning can lead to vestibular signs due to over-stimulation or inflammation of the eardrum and deeper ear structures. The use of certain drugs, such as aminoglycoside antibiotics, and the overdose of other medications such as metronidazole can be toxic to inner ear tissue. Deafness could be the end result in some cats.

Idiopathic peripheral vestibular disease is also commonly seen in cats. The problem can arise acutely in any age, breed, or sex. One study indicated this form might occur more frequently in July or August. There is no known cause though involvement of a possible environmental source (migration of *Cuterebra* larva) is speculated, or a prior viral upper respiratory infection. As cats recover over the following few weeks, they may be left with a residual head tilt.

Central vestibular signs result from more significant disease. Likely causes are cancer (primary and secondary forms), viral disease such as feline infectious peritonitis (FIP), plus such forms of encephalitis as toxoplasmosis (parasitic infection) and cryptococcosis (fungal infection). Bacterial infections or abscessation are usually extensions to the brain from origins in the middle or inner ear.

Diagnosis of vestibular disease requires a good history and physical examination. A preliminary diagnosis between peripheral and central disease is important to guide testing methods. Examination of both ear canals and tympanic membranes along with a neurologic evaluation should be done. Baseline lab work includes a complete blood count, chemistry profile, and urinalysis. Baseline testing would also include testing for feline leukemia virus, feline immunodeficiency virus, and titers for feline coronavirus, *Toxoplasma*, and *Cryptococcus*. Evaluation for increasing IgG titers and presence of an IgM titer would signify an active toxoplasmosis infection.

Radiographs of the head may help detect ear disease by determining changes to the tympanic bulla. Radiographs though are non-specific diagnostic aids and do not show soft tissue involvement well. Newer imaging techniques, such as computed tomography (CT scan) or magnetic resonance imaging (MRI), are much better at locating lesions in either the ear or the brain. MRI is especially useful for locating soft tissue lesions. Because MRI is an expensive procedure, it is most often used to differentiate central (brain) from peripheral (ear) disease after prior baseline tests have been performed. A cerebrospinal fluid (CSF) tap is another diagnostic option when encephalitis is suspected. One of the most common forms of encephalitis is feline infectious peritonitis (FIP). FIP occurs primarily in cats less than two years of age and causes progressive disease. The brain stem and spinal cord are the primary areas affected. Analysis of CSF will demonstrate an elevated protein level, primarily globulins, and a moderate number of cells, predominantly neutrophils or lymphocytes. An antibody titer or PCR test of the fluid for coronavirus may be inconclusive.

Treatment of vestibular disease is dependent on the type present, peripheral or central, and determination of the underlying cause. Most cases begin to improve with supportive care within 72 hours and return to normal in one to three weeks. During treatment, many cats have difficulty eating and drinking due to a lack of coordination and associated nausea. Hand feeding and the nearby placement of the food, water, and litter boxes may be required. Drugs such as meclizine can be given for nausea. Antibiotics (topical and/or systemic), glucocorticoids, and miticide therapies may be used for otitis cases depending on the underlying cause. Infection, polyps, or cancer may require surgical exploration of the tympanic bulla.

Central disease is considered more serious and potentially more difficult to treat, so knowing the underlying cause is important. Palliative treatment with corticosteroids to reduce brain swelling and inflammation is mostly used for brain cancer. Some cancers may respond to chemotherapy (lymphoma) or surgical debulking (meningioma). Bacterial encephalitis often requires antibiotic therapy for 4 to 6 weeks. The drug of choice for toxoplasmosis is clindamycin, while *Cryptococcus* responds to treatment with itraconazole or fluconazole. Unfortunately, FIP has no effective treatment.

References:

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