Partner Veterinary
EMERGENCY & SPECIALTY CENTER

Vestibular Disease in Dogs

What is the Vestibular System?

The vestibular system is the part of the nervous system responsible for maintaining normal posture and balance. The vestibular system has central components located in the brain (brainstem and cerebellum) and peripheral components in the middle and inner ear.

What is Vestibular Disease?

Vestibular 'disease' is a broad term encompassing any problem that affects these balance centers. Clinical signs often present acutely; however, a more gradual onset is also possible. Signs of vestibular dysfunction include a 'drunken' gait, circling, leaning or falling to one side, a tilted head, abnormal eye position (strabismus) or movement (nystagmus), and sometimes even 'crocodile rolling'.

Central vs. Peripheral?

The examiner's initial goal is to determine if signs of vestibular dysfunction are central (within the brain) or peripheral (within the middle and inner ear) as this will determine the most appropriate diagnostic plan.

Causes of peripheral vestibular dysfunction include middle or inner ear infections (otitis media-interna), drugs that are toxic to the balance receptors within the ear (ototoxic drugs), certain endocrine disorders, head trauma, or "idiopathic".

Causes for central vestibular dysfunction include, cerebrovascular accidents (stroke), metronidazole toxicity, thiamine deficiency (cats), neurodegenerative diseases, anomalous/congenital brain malformations, inflammatory brain disease (MUE), infectious diseases and primary or metastatic neoplasia (brain tumors).

What is Idiopathic Vestibular Disease?

Idiopathic vestibular disease is a well-recognized phenomenon in both dogs and cats. Cats of any age can be affected while dogs are typically older. As such, this disease is often referred to as "idiopathic geriatric vestibular disease".

Clinical signs of dysfunction often begin very abruptly and can vary from very mild to quite severe. These vestibular episodes can be confused with vascular accidents (strokes) or seizures.

The cause for this phenomenon remains unknown but some theories include abnormalities of the special fluid (endolymphatic fluid) located within the inner ear structures, a mild intoxication of the vestibular system, viral diseases or autoimmune causes. These purported explanations are like those described for Ménière's Disease in humans.

How is Vestibular Disease Diagnosed?

In many instances, a distinction between peripheral and central causes of vestibular dysfunction can be made based on a neurologic examination alone. In patients with severe signs of dysfunction (i.e. "crocodile rolling"), or those presenting peracutely, it may be very difficult to complete a thorough neurologic assessment. In these cases, making a distinction between peripheral and central vestibular disease can be difficult.

Common diagnostic tests may include

- Blood evaluation (Chemistry Profile, Complete Blood Count, thyroid levels, infectious disease testing)
- Urinalysis (testing for proteinuria)
- Blood pressure monitoring
- Otoscopic examination (typically under sedation or general anesthesia)
- MRI of the brain +/- a spinal tap and cerebrospinal fluid analysis

How is Vestibular Disease Treated?

There is no specific treatment for idiopathic/geriatric vestibular disease. Symptomatic treatment can include anti-nausea medications and mild sedatives. The use of corticosteroids has not resulted in more rapid or complete clinical improvement.

The treatment for the other causes of vestibular disease listed above varies widely and ultimately depends upon the underlying cause.

What is the Prognosis for Vestibular Disease?

The prognosis for idiopathic/geriatric vestibular disease is typically excellent. Most patients will show marked improvement in their clinical signs within the first 72 hours (about 3 days). Continued neurologic improvement is expected to occur in the following 2-3 weeks; however, some patients may have clinical signs persisting up to 5 weeks.

Occasionally, a mild head tilt will persist after other clinical signs have resolved. Relapses are uncommon but do occur.

The prognosis for other causes of vestibular disease will depend upon the underlying cause and possibly the patient's initial response to treatment.

References

1. Dewey CW. Disorders of Hearing and Balance. A practical Guide to Canine and Feline Neurology, 2016: 277-285.
2. Platt, Simon R., Olby, Natasha J., BSAVA Manual of Canine and Feline Neurology Fourth Edition, 2020: 195-212.