

THE GAIT EXAM: UNDERUTILIZED BUT CRITICALLY IMPORTANT

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Gait examination is arguably the most important part of the neurologic examination but is often not performed by veterinary practitioners. This may be due to limited appointment times, restricted exam room space or a variety of other factors. However, with observation of an animal walking (or attempting to walk), an astute practitioner can frequently localize a neurologic lesion (or get very close) based on this information alone.

Performance of the Gait Examination

The animal can be initially observed within the exam room as historical information is gathered from the client. In fact, for cats and some dogs, this constitutes the entire exam. Choosing a room without areas to escape or hide is particularly important for cats. For most dogs, it is important to have the owner or an assistant walk them on a lead for more detailed observation.

The patient should be evaluated while walking towards and away from the examiner (best way to identify ataxia) and should also be observed from the side (best way to assess paresis and stride length). If the animal is unable to stand or bear weight, adequate support of the limbs in question should be provided while assessing the ability of the animal to voluntarily advance its limbs, bear weight, and move in a coordinated manner.

Some abnormalities may be accentuated by having the animal climb or descend stairs or a hill if available, although the author does not employ this routinely. Occasionally it is useful to have cats jump on or off an elevated service such as a chair or stool, which can also accentuate subtle abnormalities. Finally, it is useful to invest some time in watching many clinically normal dogs & cats ambulate, which helps one to appreciate subtle abnormal gaits.

Abnormalities

Several abnormalities may be detected with the gait examination. These include:

Ataxia: incoordination characterized by a failure to walk or move the limbs in a straight line, crossing of the limbs over the body midline, and possibly stumbling and falling. Ataxia always indicates neurologic dysfunction and may be caused by involvement of several areas of the nervous system.

Sensory (proprioceptive) ataxia: Lesions of the peripheral sensory nerve, spinal cord or brainstem commonly cause incoordination. With spinal cord and brainstem lesions, ataxia is typically accompanied by paresis (see below). Peripheral sensory nerve lesions are rare in veterinary patients.

Cerebellar ataxia: Cerebellar lesions can cause a profound ataxia characterized by dysmetria (hypermetria and hypometria), and intention tremors. Animals with pure cerebellar lesions maintain good strength without obvious paresis.

Vestibular ataxia: Characteristic incoordination typified by leaning, drifting, stumbling, falling, and occasionally rolling to one side. Usually accompanied by a head tilt,

nystagmus, and possibly positional ventral strabismus. Bilateral involvement of the vestibular system can lead to ataxia and bizarre, wide head excursions but without an obvious head tilt or ataxia. Loss of a normal physiologic nystagmus can often be appreciated in these cases.

Paresis: muscular weakness or incomplete voluntary movement. On the gait exam, this is characterized by scuffing of the nails, dragging of one or more limbs, a short-strided gait, or rapid tiring with activity/exercise. Paresis denotes dysfunction of the nervous (motor) or muscular systems.

Lameness: Inability or reluctance to bear weight on one or more limbs. Lameness often indicates a lesion in the long bones, joints, tendons, or musculature (i.e., orthopedic diseases), although entrapment or compression of a nerve or nerve root can also lead to lameness (known as a “root signature”).

Short-strided Gait: This gait may occur secondary to paresis as described above. A short-strided gait in all four limbs (particularly in the absence of ataxia) is suggestive of a neuromuscular condition (i.e., disease affecting the peripheral nerves, muscles or neuromuscular junctions). However, such gaits may also occur from pain secondary to orthopaedic conditions affecting multiple limbs (e.g., polyarthritis).

Disconnected Gait: Also known as a “two-engine” gait, this describes an animal with different stride lengths between the thoracic and pelvic limbs. Most commonly, the thoracic limbs have the shorter stride although the opposite can also be seen.

Compulsive Pacing and Circling: This is typical of a forebrain lesion and such animals typically also show alterations of mentation and consciousness.

Dysmetria: Dysmetria refers to both hypermetria and hypometria and is typically seen with cerebellar ataxia as mentioned above. In rare cases, dysmetria may be seen in one or more limbs without ataxia.

Postural Abnormalities: These may be observed during ambulation or when the animal comes to a stop and include keeping the head and neck low or ventroflexed, kyphosis, standing with a plantigrade or palmigrade stance, maintaining a wide-based stance and holding the pelvic limbs in a rostral position (i.e, flexed at the hip).

Examples of Gait Abnormalities and their Causes

Compulsive pacing and/or circling: forebrain lesion

Ataxia in all 4, paresis in all 4 limbs: cervical spinal cord or brainstem lesion. Best differentiated by cranial nerve examination or identifying a vestibular quality to the ataxia

Ataxia in all 4 limbs with a tendency to drift, stumble fall or roll to one side: vestibular lesion

Ataxia (usually profound) in all 4 limbs without paresis: cerebellar lesion (usually accompanied by intention tremors & hypermetria)

Disconnected (two-engine) gait characterized by short-strided thoracic limbs and ataxia with paresis in the pelvic limbs: C6-T2 myelopathy (particularly cervical spondylomyelopathy or “Wobbler’s syndrome”)

Ataxia and paresis in the pelvic limbs: T3-L3 myelopathy; L4-S2 myelopathy is also possible but less likely

Paresis in the pelvic limbs characterized by a short-strided gait: L4-S2 myelopathy or neuromuscular lesion

Paresis in all 4 limbs characterized by a short-strided gait; often worsens with activity or exertion; notable lack of ataxia: neuromuscular lesion; polyarthritis also possible

REFERENCES

1. McDonnell JJ, Platt SR, Clayton LA. Neurologic conditions causing lameness in companion animals. Vet Clin North Am Small Anim Pract 2001;31:17-38.

