The Wobbler Syndrome

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The wobbler syndrome, or cervical (neck) vertebral instability syndrome, is a malformation of a vertebra (or vertebrae) that leads to intervertebral disc rupture and compression of the spinal cord. This compression injures the portion of the spinal cord necessary for the animal’s normal strength and coordination to stand and move. Therefore, the spinal cord disease is secondary to the vertebral column abnormality. The primary disease condition resides in the skeletal structures that surround the spinal cord.

In Doberman Pincher and Great Dane dogs the skeletal abnormality occurs predominantly in the last three cervical vertebrae; the fifth, sixth and seventh. The cause of the skeletal malformation or malarticulation (joint abnormality) is unknown. Clinical studies suggest both genetics and nutrition may play a role in the development of this defect. A genetic predisposition is suggested by the distinct breed predilection and by one study where mating of affected individuals produced a considerable number of affected offspring. No definitive pedigree studies have proven a genetic basis or the genetic factors involved. Nutritional factors have been implicated by the appearance of this disease in young Great Dane dogs. Research has shown that, in some young dogs, excessive intake of a diet high in protein, energy, calcium, and phosphorus accelerates growth. This may induce skeletal changes such as those seen in some of these wobbler dogs.

The most common vertebral abnormality is a narrow opening into the bony passageway through which the spinal cord must pass. The opening is reduced in height and mildly compresses the spinal cord, especially during extension of the neck. Other abnormalities in these cervical vertebrae include an overgrowth of the body of the vertebrae into the passageway for the spinal cord, an abnormal shape of the vertebral body and the joints between the vertebrae, too narrow a passageway in width through the vertebrae; and excessive mobility of the cervical vertebrae, causing displacement or subluxation (partial dislocation). All of these abnormalities, which provide an early normal life, eventually place so much stress on the Intervertebral Disc that it degenerates and ruptures, placing additional pressure on the already compressed spinal cord. This results in an acute problem, which is actually secondary to a chronic abnormality of the last three vertebrae.
There is no evidence published to date that the disease can be predicted by radiographic (x-ray) study of clinically normal dogs. Undoubtedly a severe malformation in the vertebrae could indicate that an individual dog would have a good chance of experiencing spinal cord compression. However, dogs with minimal radiographic changes may remain free of clinical signs of spinal cord compression.

In general, the onset is more common in younger Great Danes and older Doberman Pinchers, but exceptions to this generality are common. Radiographs should be taken in the normal position and with the neck extended and flexed. A myelogram (a contrast dye study of the spine) is necessary to define the lesion because the extent of the compression cannot be outlined on regular radiographs.

SYMPTOMS

In most dogs, the onset of clinical signs is slow and insidious and not associated with any known external injury. The initial signs of weakness and incoordination occur rapidly, and are most apparent in the hind limbs. The signs worsen, slowly over succeeding weeks. The hind limbs often are spread wider apart than normal, causing the hindquarters to sway from side to side. The hind limbs may not fully extend, causing a crouched posture, with the toes scuffing on the ground with each step. The degree of forelimb involvement varies from no observable abnormality to an obvious stiffness and awkward use of the forelimbs. In mild cases or early in the disease these signs may be most obvious as the dog turns corners, and are less evident when it walks or runs along a straight path. An abrupt change in speed or direction may exacerbate the neurological signs.

Because the nervous system involvement is limited to an injury of a small section of the cervical spinal cord, these dogs remain alert and responsive, and eat and excrete normally. Despite this injury, these dogs usually do not exhibit pain on manipulation of the neck.

The reason that some dogs do not show clinical signs until they are a number of years old probably is because their initial vertebral abnormalities were mild. With time, movement at the abnormal articulations cause secondary changes in the intervertebral disc which result in degeneration and disc rupture. When watching affected dogs move it must be determined if the gait abnormality is because the dog cannot function normally, as with the Wobbler Syndrome, or does not want to function normally. The latter occurs from pain associated with skeletal disease in the limbs, including hip dysplasia, osteochondrosis dissecans of the cervical vertebrae in young, giant
breed dogs, and hypertropic osteodystrophy. In dogs with these skeletal
diseases, the stride usually is shorter than normal, often creating a choppy
gait. However, these patients always know the position of their limbs, which
are kept directly under the body. Joint paint may be determined by palpation.

DIAGNOSIS

The nature of the Awobbler® syndrome requires a more extensive evaluation
than regular radiographs (x-rays). The myelogram is used to confirm and
document not only the location of a compression, but also the amount of
spinal cord swelling. With new gas anesthetics, advanced monitoring
equipment, and modern Acontrast® agents for the dye study, the myelogram
is now a common and safe diagnostic procedure when performed with care
and under the proper conditions. Laboratory tests on blood and cerebrospinal
fluid usually are normal.

TREATMENT

With the first clinical episode, treatment is directed primarily at the spinal
cord injury and consists of corticosteroids to attempt to reduce edema
(swelling) that may be present in the compressed segment of the spinal cord.
However, medical therapy usually provides only temporary improvement at
best. Surgery provides for spinal cord decompression and an opportunity to
directly repair some of the vertebral abnormalities. Although many
techniques are described, the most common surgical procedure is to remove
the ruptured disc material and distract the collapsed vertebrae while allowing
them to heal in a stable position.

PROGNOSIS

The prognosis with Wobbler Syndrome depends on the severity of
the signs and radiographic evidence of the degree of skeletal
disease present. If the dog is paralyzed and unable to stand, the
prognosis for recovery after surgery is guarded. The dog that
ambulates freely but with incoordination has a better prognosis.

While we anticipate that the surgery will stop the progression of
the signs and result in improved function, it is the degree of
permanent spinal cord damage already sustained that ultimately
determines the final outcome.