

## **Owner Information Sheet – *Acute non-compressive nucleus pulposus extrusion***

### **Background**

Intervertebral discs (IVD) are important for stability and support of the spine, whilst allowing movement and distribution of loads between the bones (vertebrae). To perform this function, the IVD has two components: an inner gelatinous bag called the *nucleus pulposus* and an outer multi-layered ligamentous capsule called the *annulus fibrosus* that contains the nucleus pulposus.

### **Cause**

An acute non-compressive nucleus pulposus extrusion (ANNPE) is a specific type of intervertebral disc problem that is also known as a ‘high-velocity low volume’ disc extrusion. It occurs secondary to excessive force being placed on a normal disc (e.g. vigorous exercise, falling, trauma). These excessive forces cause a tear in the outer annulus fibrosus, which allows a small fragment of the nucleus pulposus to fire out of the gelatinous bag and hit the spinal cord at high velocity. This small volume of material does not significantly compress the nerves, but the contusion (bruising) of the spinal cord results in an acute onset of spinal cord injury.

ANNPE most commonly occur in young to middle aged, middle to large breed dogs, but has been reported in any breed.

### **Clinical signs (symptoms)**

The clinical signs of ANNPE are highly variable and depend upon the severity of spinal cord injury and the location of the affected disc. The severity of spinal cord injury varies and will result in a differing ‘grade’ of injury.

<b>Grade of injury</b>	<b>Clinical signs</b>
1	Pain only
2	Walking with weakness and wobbliness in the legs
3	Loss of ability to walk but still able to voluntarily move the legs a little
4	Paralysis – an inability to move the legs but with intact feeling in the feet
5	Paralysis with loss of feeling of a painful stimulus applied to the toes and urinary/faecal incontinence

## Diagnosis

Magnetic resonance imaging (MRI) is the test of choice to make a presumptive diagnosis of ANNPE. If MRI is not an option, then a high suspicion of ANNPE can sometimes be made on the basis of a typical clinical history and examination findings.

## Treatment

The treatment of ANNPE includes nursing care, physiotherapy, pain relief and bladder management as required. Restricted physical activity may be advised for 4–6 weeks to allow the defect in the annulus fibrosus to heal so that further disc material cannot extrude. Surgery is not required as there is no significant compression of the nerves or spinal cord to relieve.

Nursing care consists of providing a clean and comfortable bed, helping your pet to change sides if they are lying on one side for more than four hours, providing easy access to food and water, manually expressing the bladder if your pet is not able to consciously empty it, and liaising with your veterinary neurologist or primary care veterinarian to ensure that your pet has adequate pain relief.

Physiotherapy plays a vital role in the recovery period, as inactivity and recumbency may result in increased joint stiffness, muscle weakness, muscle atrophy, contractures and pressure sores. Our physiotherapy team can assess your pet, formulate a physiotherapy treatment plan for your dog at home and support you throughout your dog's recovery.

## Prognosis

The prognosis for recovery is often good but, as for other forms of disc disease, this will depend upon the severity of the spinal cord injury. More specifically, the maintenance of feeling a painful stimulus applied to the toes (so called, 'deep-pain') suggests to us that some nerve fibres can still send information and the spinal cord may have the capacity to recover. Ultimately, the rate and extent of recovery is highly variable and can be difficult to predict. Dogs with mild spinal cord injuries can recover quickly and fully. Dogs with severe injuries may also recover, but this can take much longer and these dogs may be left with residual neurological dysfunction (e.g. remaining wobbly on the back legs when walking).

If you have any concerns about your dog or their treatment, do not hesitate to contact your veterinarian.

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