

# SMALL ANIMAL SURGERY MONTHLY NEWSLETTER

## CASE OF THE MONTH: 'BRINDLE'

### Signalment:

Three year old Male Neutered Boxer

### History:

Brindle presented to Langford with a history of peracute onset hindlimb paraparesis. While on his morning walk Brindle developed a left hindlimb lameness following an episode of play with another dog. Over a course of minutes this rapidly progressed to complete hindlimb collapse with loss of ambulatory ability. After assessment at the referring practice an emergency referral to Langford was arranged.

### Clinical examination:

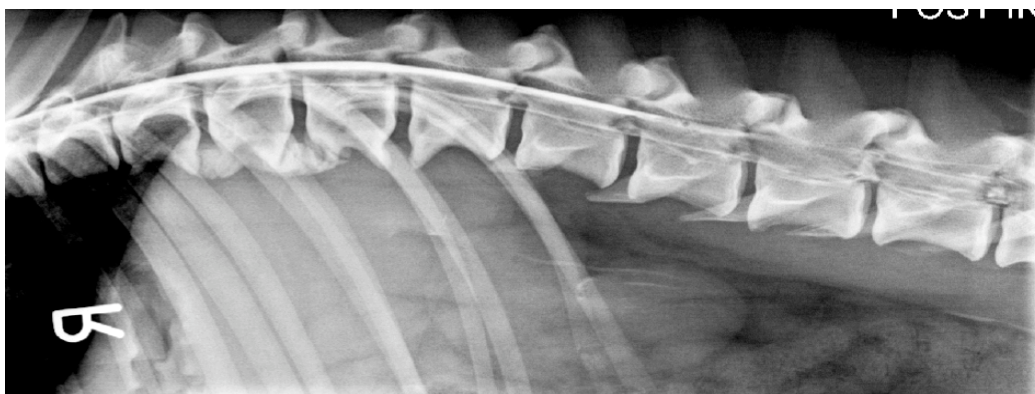
Brindle was nonambulatory and had no voluntary movement present in the left hindlimb. Voluntary movement was present in the right hindlimb. Extensor rigidity was noted in the thoracic limbs. On neurological examination, patella and withdrawal reflexes were normal in the right hindlimb but absent in the left hindlimb. Superficial and deep pain sensation were present in the right hindlimb but absent in the left hindlimb. Perineal and cutaneous trunci reflexes were normal. No neurological abnormalities were noted in the thoracic limbs.

### Assessment:

Thoracolumbar myelopathy with marked lateralisation, lower motor neuron signs left hindlimb and normal perineal reflex consistent with lesion affecting spinal cord segments L4-S1. Differential diagnoses included: Fibrocartilaginous embolism (FCE), Type 1 intervertebral disc disease, Type 3 (low volume, high velocity) intervertebral disc disease. Brindles owners were counselled regarding the findings on neurological examination and the likely differential diagnoses. Myelography was recommended to rule out a compressive lesion that could potentially be addressed with surgery.

### Investigation:

Brindle was anaesthetised and plain radiographs were taken of the lumbar and thoracic spine. Ventral spondylosis was noted at T11-L1 inclusive and L7-S1. Myelography was performed via a lumbar puncture at L5-L6. Iohexol (300mg/ml) was employed as the contrast agent. On the lateral view mild attenuation and abaxial deviation of the contrast columns was noted over the vertebral bodies of L3-L5. Similar changes were identified on the dorsoventral view. The changes were consistent with spinal cord swelling (intramedullary lesion). On the basis of the myelographic findings a compressive lesion associated with intervertebral disc disease was ruled out as a differential, thus surgery was not indicated. A sample of cerebrospinal fluid was submitted for cytology. A pleocytosis (28 cells/ul) with mononuclear cell predominance was noted.



**Aftercare:**

Brindle was observed to urinate voluntarily in hospital, thus was discharged the day after myelography. Physiotherapy (passive range of motion exercises in all hindlimb joints, sling assisted walking and standing) was recommended to commence on discharge. Hydrotherapy was also discussed as an option. Brindles owners were counselled regarding the possibility of incomplete recovery on the left side with persistent neurological deficits.

**Home care and follow up:**

Brindle is now 6 weeks post myelography. He has made steady improvement over this time. His right hindlimb is now close to normal. Progress on the left side has been much slower – he is walking very well on this limb but the leg is quite stiff and this makes it difficult for him to sit down. He is weight bearing on the plantar surface of the paw for the majority of the steps but he is occasionally 'knuckling over' on this limb (see video footage and stills). He has been attending weekly hydrotherapy sessions at the Primrose Trust Hydrotherapy Unit at Langford. During the sessions Brindle has been exercised in the underwater treadmill with the water level raised to 21 inches to provide buoyancy support. The hydrotherapy nurses have focused on weight shifting while in the treadmill to encourage Brindle to increase the workload on his weaker limb.

**Discussion:**

The pathogenesis of fibrocartilaginous embolism is not completely understood. The embolic particles have been identified on histology as histochemically identical to the nucleus pulposus.<sup>1</sup> One explanation for the prevalence of this condition in large breed dogs is that the nucleus remains softer for longer which may make it more prone to vascular injection<sup>2</sup>.

Although a definitive diagnosis of fibrocartilaginous embolism can only be made on post mortem<sup>3</sup> this case certainly has all the hallmarks of this condition: peracute onset, non-progressive following initial progression over a few hours, asymmetric clinical signs, localisation to the lumbosacral intumescence<sup>4</sup>. Brindles signalment is also typical for this condition, the majority of patients are middle aged large breed dogs<sup>2</sup>.

A presumptive antemortem diagnosis of fibrocartilaginous embolism is frequently made on clinical signs in combination with diagnostic imaging. Of the various imaging modalities, magnetic resonance imaging is the most useful because it provides direct images of the spinal cord parenchyma. The MRI findings in cases of fibrocartilaginous embolism have been recently described in a large case series<sup>5</sup>. Typically, focal hyperintensity on T2 weighted images is observed. While myelography is normal in the majority of cases<sup>2</sup> mild attenuation of the contrast columns secondary to intramedullary swelling, as observed in this case may be seen.<sup>3,4,6</sup> In this case myelography was performed to eliminate the possibility of compressive lesion amenable to surgery.

Brindles progress over the past 6 weeks has been very encouraging. In the largest cases series to date on this condition<sup>4</sup> dogs with absence of deep pain on initial neurological examination were significantly more likely to be euthanased. In this study, the presence of changes on CSF was another negative prognostic indicator. Dogs where CSF changes were identified were significantly more likely to be euthanased. Given that Brindle had both these negative prognostic indicators we are very relieved that recovery has been so rapid. We were also concerned that the lumbosacral intumescence was involved. As grey matter has a higher metabolic rate compared with white matter it is more vulnerable to ischaemic injury. Grey matter damage in the intumescence has more severe clinical consequences compared with grey matter damage in spinal cord segments T3-L3. As cage rest is not required for fibrocartilaginous embolism, active physiotherapy and hydrotherapy can be commenced almost immediately. Brindles owners are very committed to his aftercare and their efforts in diligently performing his physiotherapy and transporting him to his weekly hydrotherapy sessions have undoubtedly contributed to his rapid improvement.

The Primrose Trust Hydrotherapy Unit has been a fantastic addition to the facilities at Langford and has been particularly beneficial for our orthopaedic and neurology cases. The facilities include a Modular Pool, Water Walker Treadmill, Hot Spa and Overhead Hoist. For Brindle, the treadmill has been particularly useful in stimulating sensory awareness and muscular strengthening.

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