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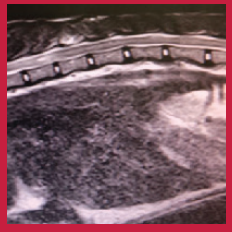
Case Study
Contest

2017

Case Report : Treatment of Severe Hind Limb Paresis and Posterior Paresis Caused by Traumatic Myelopathy in Cats Using PSCO-524® (Antinol®) and Physical Therapy



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Abstract

A 2 years old domestic short hair cat weighted 3.55 kilograms was referred to Kasetsart University Veterinary Hospital for severe hind limb paresiswith loss of sensory function. The onset of symptoms was observed a week ago after the cat returned from missing. Radiographic examination did not show any vertebral disorders. Magnetic Resonance Imaging (MRI) examination found accumulation of fluid in spinal cord at T_{10}-T_{12} level, which indicated spinal cord injury. Traumatic myelopathy was diagnosed. The paresiswas grade 5 so PSCO-524® (Antinol®) 1 capsule per day was prescribed. After a week of the treatment, the cat was able to control urination and voluntary motor function of the hind limbs. However, the sensory system malfunction remained. Spinal walk, walking with the hind limbs when sensation loss was observed after physical therapy was concurrently provided for 3 weeks.

Keywords: Posterior paresis, traumatic myelopathy, cat, PSCO-524®, Antinol®, Magnetic Resonance Imaging, MRI, spinal walk

Introduction

Traumatic myelopathy is common in pets, especially those that are kept outdoors since they are at high risk of injury from beating, falling, fighting, and car accidents. Spinal cord trauma caused by the injury includes contusion, laceration, ischemia, and compression, for example. Paresis may occur as a result at different level of severity depending on location of the lesion, degree of the trauma, and duration. Diagnosis can be performed by radiographic imaging, computed tomography and magnetic resonance imaging to identify location, type of injury and to assess the severity of spinal trauma.

Treatment of traumatic myelopathy is mainly concentrated on prevention of secondary injury which is a consequence of inflammation after primary injury. Purpose of the treatment is to inhibit the ascending and/or descending damage of spinal cord. The treatment should be as early as possibleeven though there is no current medication proved to be effective for secondary injury. Drugs of choice are those with neuroprotective effect, for example, methylprednisolone sodium succinate (MPSS) and polyethylene glycol. There is not a report confirming efficacy of spinal trauma medication for veterinary use.

Symptomatic treatment is also recommended, such as pain control, urination and compression management. Physical therapy is considered individually for each case depending on severity of paresis and restoration of voluntary motor function.

Case history

A 2 years old domestic short hair cat weighted 3.55 kilograms was suffering fromparesis of both hind limbs. Observation of clinical signs showed deterioration from paresis grade 3 to grade 5 within 1 week. The cat was previously missing for 3 days and returned home paralyzed without external injury. Prednisolone 0.4 mg/kg bid was prescribed for 1 week. No signs of improvement after the treatment was completed,so the cat was referred to Neurology Center at Kasetsart University Veterinary Teaching Hospital.

Physical Examination

Vital signs of the cat were normal. The cat was alert and responded to environmental stimulation. Lung and heart sounds were normal. Pulse was detected from both hind limbs palpation. External injury and wound were not found.

Neurological examination found that the cat was always in dog sitting posture. Proprioceptive reflex and deep pain perception were negative while patellar and flexor reflex were normal. Cutaneous trunci reflex was observed at T_7 and above. Urinary incontinence was present. The diagnosis was paresis of both hind limbs at grade 5 with the lesion between T_3 and L_3 (thoracolumbar segment).

Diagnosis

The case history and neurological examination leaded to radiographic imaging of thoracolumbar segment (T3-L3). Vertebral disorders were not identified. Therefore, further examination was focused on spinal cord which is soft tissue inside the vertebral canal and unable to be shown in radiographic image. MRI was selected for the diagnosis.

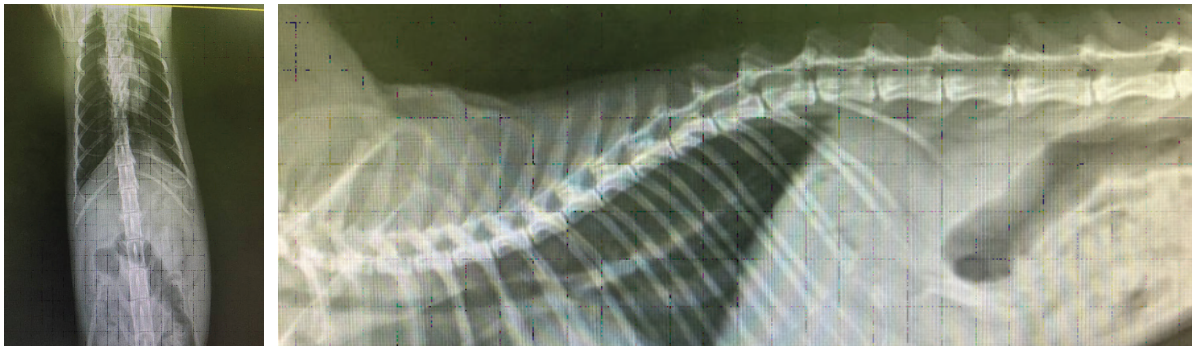

Figure 1 and 2. Radiographic images of T3-L3 showing normal vertebrae

The MRI examination found hyperintensity signal at intramedullary of T_{10}-T_{12} level on T2W, indicated fluid accumulation, syringomyelia, without any compressive lesion which can be commonly found in case of direct traumatic myelopathy.

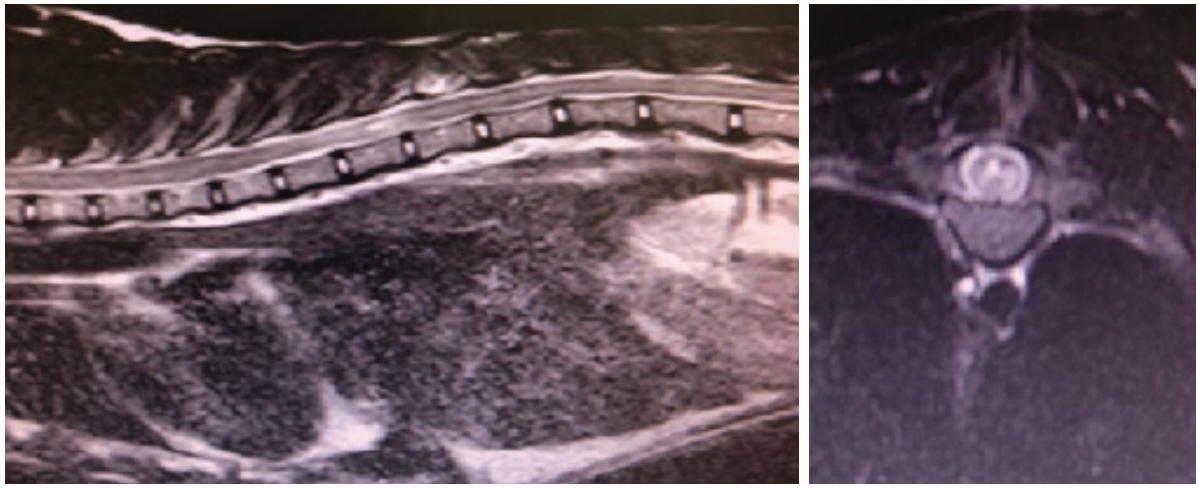

Figure 3 and 4. MRI images showed fluid accumulation (syringomyelia) on thoracic segment

From case history and lesions identified by MRI images, injury of the thoracic spinal cord was diagnosed. The cause was likely to be severe concussion of spinal cord that resulted in hind limb paresis.

Treatment

Since there was no response to 0.4 mg/kg bidprednisolone, a steroid drug, it was discontinued after 1 week. PSCO-524® (Antinol®) 1 tablet per day was then prescribed for anti-inflammatory effect. Other medications included gabapentin 10 mg/kg bid for neuropathic pain control, amoxy-clavulanic acid 25 mg/kg bid for prevention of urinary tract infection due to UB catheterization, and methylocobalamin (B12) 500 mg/day for neurological function restoration.

Outcome and follow up

After 1 week of treatment, the cat started to show motoric function of right hind limb. However, paresis of both hind limbs was remained at grade 5. Administration of PSCO-524® (Antinol®) was continued to reduce inflammation from secondary injury that was usually a consequence of primary injury. Gabapentin, amoxy-clavulanic acid and methylocobalamin were continued as well. Physical therapy using passive range of motion (PROM) was added to the treatment program. The owner was asked to provide the physical treatment at home. The cat was scheduled for electrical stimulation in the following 2 weeks.

In the third week of the treatment, the cat was able to control urination so UB catheterization and antibiotic was stopped. Neurological examination found voluntary motor function of both hind limbs. The cat showed walking posture and started to use hind limbs for weight bearing while standing. However, sensory function of the hind limbs was still deficit. There was a tendency that the cat could eventually use hind limbs to walk as spinal walk. PSCO-524® (Antinol®) and methylcobalamin was continued as well as electrical stimulation of the hind limb muscle twice a week. Follow up showed that hind limb muscle was strengthened, and function of the limbs was improved.

Five weeks later the cat started to use hind limbs for walking. Administration of PSCO-524® (Antinol®), methylcobalamin and physical therapy were continued until 12th week.

Table 1. Neurological response by week of treatment

Response	Week 0	Week 1	Week 3	Week5
Proprioception reflex	0	0	0	0
Spinal reflex HL	2	2	2	2
Deep pain	0	0	0	0
Urinary incontinence	Yes	Yes	No	No
HL motor function	0	Rt HL	Both HL	Both HL
Weight bearing HL	0	0	1	1-2
Walking	0	0	1	1-2

0: No response, 1: Slight response but not normal, 2: Normal response

Discussion

Treatment of traumatic myelopathy is focused on prevention of secondary injury that is a consequence of primary injury. Purpose of the treatment is to inhibit the increase of damage to spinal cord. There is no current medication proved to be effective for secondary injury. There are various medications available for treatment, however prognosis of the disorders and treatment success depends on severity of the paresis. Posterior paresis with loss of sensory function is the most severe paresis (grade 5). The chance that animals can restore function of the legs is less than 5%, however, the chance of spinal walking is unknown.

Use of PSCO-524® (Antinol®) in this case was aimed reduce inflammation caused by secondary injury and to prevent more damage of the spinal cord while in healing process. PSCO-524® (Antinol®) is consisting of omega-3, DHA, and EPA which is effective against inflammation, and consisting of more than 90 other essential fatty acid. PSCO-524® (Antinol®) can be used in a long term without any adverse effects, particularly in cats. Metabolization of drugs by the liver in cats is not as effective as in dogs, so limitation of drug use in cats is common especially drugs that affect liver function such as steroid.

Conclusion

This cat was suffering from traumatic myelopathy at T_{10}-T_{12} that caused posterior paresis grade 5. The prognosis was poor and the likelihood that hind limbs function and urination control could be restored was less than 5%. After treatment with PSCO-524® (Antinol®), anti-inflammatory supplement, the cat could control urination and the neurological function was restored. The cat could perform spinal walking within 5 weeks after the treatment. It is concluded that PSCO-524® (Antinol®) is an effective alternative of choice for traumatic myelopathy in cats.

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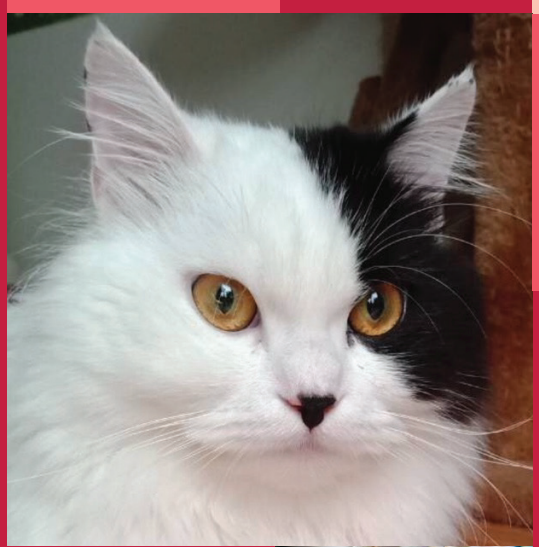

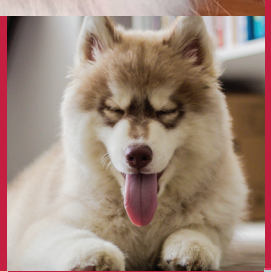

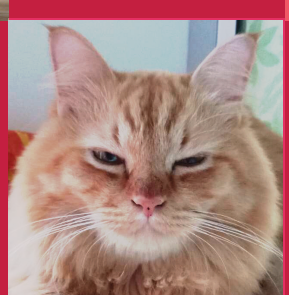

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