

**Antinol[®]
Case Study
Contest**

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Case Report :
Efficacy of PCSO-524® and prednisolone combination treatment for neck pain in Chihuahua dog with Chiari-like malformation and syringomyelia



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Abstract

A 18-month-old male intact chihuahua presented with recurrent neck pain within 3 months after stop using prednisolone. Upon physical and neurological examination, dog displayed pain and neck stiffness without neurological deficits. Radiographic findings of cervical spine was normal. The dog was treated with prednisolone to relieve pain and inflammation and showed improvement of clinical signs. However, the recurrence occurred in 7 months with more severity. Magnetic resonance imaging (MRI) demonstrated Chiari-like malformation and syringomyelia at C2-C4 and C7-T1 region. PCSO-524[®] (VetzPetzAntinol[®]) was administered in combination with prednisolone and gabapentin. The clinical signs improved in 2 weeks so prednisolone was gradually reduced until discontinued but dose of PCSO-524[®] remained constantly. The dog was able to recover from neck pain and continued life activities as normal. Long-term supplement of PCSO-524[®] (VetzPetzAntinol[®]) was effective for reducing inflammation of spinal cord in dog suffered from neck pain caused by syringomyelia.

Introduction

Chiari-like malformation (CM) is defined as a decreased caudal fossa volume, due to congenital hypoplasia of supraoccipital bone which is a common cause of obstruction in foramen magnum that leads to syringomyelia (SM) in dogs. Syringomyelia is characterized by the accumulation of cerebrospinal fluid (CSF) within the parenchyma of the spinal cord. Chiari-like malformation and syringomyelia are most common in Cavalier King Charles Spaniel and Griffon Brussels Griffons dogs. It is estimated that 95% of Cavalier King Charles Spaniel dogs are affected with CM (1). The clinical signs in dogs with CM is usually neuropathic pain caused by syringomyelia. Treatment of the disease includes medication and operation. Determination of treatment choice depends on severity of the disease. Surgical treatment is recommended in case of no response to medication or in young dogs with severe pain. Long-term follow up shows that surgical treatment is effective and life quality of the dog is improved.

Case history

An 18-month-old male intact chihuahua and 2.18 kg body weight was presented with neck pain and cervical stiffness. Dog showed same clinical signs 3 months previously and was successfully treated. Physical and neurological examination showed pain and neck stiffness when raising or turning the neck left and right without neurological deficits. Radiography showed normal alignment of cervical spine. Prednisolone 0.5 mg/kg q12h was prescribed for 2 weeks and reduced to 0.5 mg/kg q24h for another 2 weeks and clinical signs rapidly improved after treatment. Seven months later, the dog was admitted again due to intermittent recurrence of neck pain. Clinical signs occurred every 2 months. When this happened, the owner gave prednisolone 0.5 mg/kg q12h orally to the dog and reduce the dose down until the symptom was improved. However, dog showed severe neck pain in the latest incident and thus was brought in for veterinary care. Palpation found neck pain, neck stiffness, and discomfort when the neck was turned right. Physical and neurological examination did not show any disorder.

Diagnosis and results

Hematological test showed slightly increased white blood cell with normal blood chemistry profile. Radiography did not show any abnormality of cervical vertebrae (Figure 1). However, Magnetic resonance imaging (MRI) demonstrated Chiari-like malformation and syringomyelia at C2-C4 and C7-T1 vertebral column (Figure 2).

Figure 1. Radiographic image showed no abnormality of cervical vertebrae.



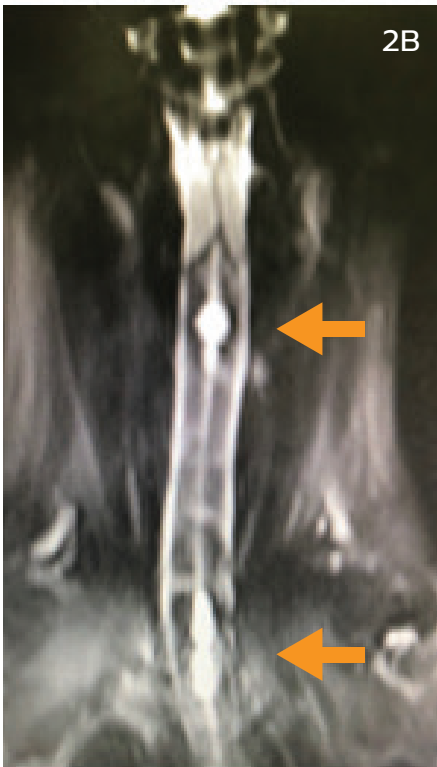


Figure 2. Sagittal T2-weighted MRI showed 2A: abnormal occipital bone (arrow) and 2B: accumulation of CSF at C2-C4 and C7-T1 (arrow head).

Treatment outcome and follow up

The examinations, particularly the MRI, identified that the cause of neck pain was syringomyelia at the spinal cord in cervical segment in combination with Chiari-like malformation. Prescribed medication included prednisolone 0.5 mg/kg (Prednisolone Olan[®], Olan-Kemed Co., Ltd) q12h, Gabapentin 10 mg/kg (VULTIN 100[®] Unison, Laboratories Co., Ltd) q12h, pain killer q12h (only first day), ¼ tablet of Sucralfate 1 g (Ulsonic TM, Siam Bheasach Co., Ltd.)q12h, and tolperisone hydrochloride 2 mg/kg (Mydocalm[®], Unison, Laboratories Co., Ltd) q12h for muscle relaxation. Two weeks after the treatment, the dog showed less symptom of neck pain, and the owner decided to discontinue the medication. After 2 days of no medication, the dog started to show sign of head raising again so prednisolone q24h was given to the dog again by the owner. The veterinarian also added PCSO-524[®] (VetzPetzAntinol[®]) q24h at this step. Two weeks later, the neck stiffness was drastically decreased so prednisolone dose was reduced to q24h and discontinued in 4 weeks together with tolperisone and gabapentin. Only PCSO-524[®] was continued with no sign of recurrent neck pain. The owner was called 4 months after the last examination and informed the veterinarian that there was occasional recurrence of neck pain that could be under control by only PCSO-524[®] 1 capsule q24h without prednisolone administration.

Discussion

Chiari-like malformation (CM) is the hypoplasia of supraoccipital bone that causes stenosis of caudal foramen and cerebellum herniation. The CM interferes with the circulation of CSF from craniocervical junction through the spinal canal. The accumulated CSF causes ventricle in the spinal cord or syringomyelia. Syringomyelia can also be found in case of injury, trauma, inflammation and spinal cord tumor. It is common in small breed dogs, particularly Cavalier King Charles Spaniels and Griffons (2, 3). The age at risk is usually between 6 months to 10 years. Symptoms of the disease may be acute or gradually developed. Common clinical signs include neuropathic pain with or without neurological deficits depending on the location and severity of spinal cord damage. It was reported that 35% of dogs suffered from syringomyelia and Chiari-like malformation showed sign of neck pain (4). Neck stiffness, yelping in pain when neck or shoulder is touched, and scratching without contact of the foot and neck skin, phantom scratching, due to neuropathic pain.

Chiari-like malformation (CM) and syringomyelia (SM) can be accidental findings in some dogs without any clinical signs. Treatment is not necessary in case of subclinical or mild symptoms. Dogs that show pain or nervous disorders can be treated with medication or operation. Effective medication usually includes pain killer, gabapentin 10-20 mg/kg q8h for example, and those that prohibit production of CSF, such as furosemide 1-2 mg/kg q12h and prednisolone 0.5-1 mg/kg q24h. Neuropathic pain should also be concerned and recommended treatment includes anticonvulsants, tricyclic antidepressants, cyclooxygenase (COX-2) inhibitors, amantadine, or acupuncture (5). It is estimated that 70% of treated dogs is recovered. In case of medication failure, operation to decompress foramen magnum is recommended in combination with medical treatment of neuropathic pain.

In this case study, prednisolone and gabapentin were core elements of the treatment. Long-term effect of prednisolone was avoided by gradual decrease of the dose until it was completely stopped. However, the recurrence of neck pain after prednisolone termination made it necessary to keep prednisolone in the treatment program. Administration of PCSO-524[®] was considered for use in combination with prednisolone to treat spinal cord inflammation. PCSO-524[®] or Antinol[®] (VetzPetz, Antinol[®] DKSH, Thailand) is New Zealand green-lipped extract that has anti-inflammatory effect. Its main ingredient is Eicosapentaenoic acid (EPA) and Docosahexaenoic acid (DHA). The DHA is Omega-3 fatty acid that can alter 5'-lipoxygenase (5-LOX), 12'-lipoxygenase (12-LOX) and cyclooxygenase (COX) pathways resulting in decrease of inflammation (6). Substrate of inflammatory mediator, arachidonic acid, is also reduced by its effect. Administration of PCSO-524[®] potentially accounted for the relief of neck pain, partially if not totally. Omega-3 fatty acid, which is a component of PCSO-524[®] is a long-chain polyunsaturated fatty acid (LC PUFAs) that can increase blood lipid profiles, cardiovascular health, cell membrane fluidity and cell signaling cascades (7), and therefore enhance the neurological function.

Conclusion

Chiari-like malformation and syringomyelia are common in Cavalier King Charles Spaniels and small breed dogs such as Chihuahua. Remarkable symptom of the disease is neck pain and cervical stiffness. Recommended medication includes prednisolone, gabapentin, and furosemide. In this case study, prednisolone was selected for the treatment of spinal cord inflammation. Termination of prednisolone was inevitable due to recurrence of the neck pain. Therefore PCSO-524[®] was considered for use in combination with prednisolone to control inflammation of spinal cord. It is concluded that PCSO-524[®] is suggested for long-term treatment of spinal cord inflammation caused by syringomyelia and to replace long-term administration of prednisolone to avoid its adverse effects.

References

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