

NeuroWebVet Report

Pet name: Curly
Owner name: Trump
Signalment: 5 y MN French bulldog

Date: 4/5/17
Referring DVM: Blue Ridge
Weight:

History: Acute onset this morning of right sided vestibular signs. Received one dose of Metacam.

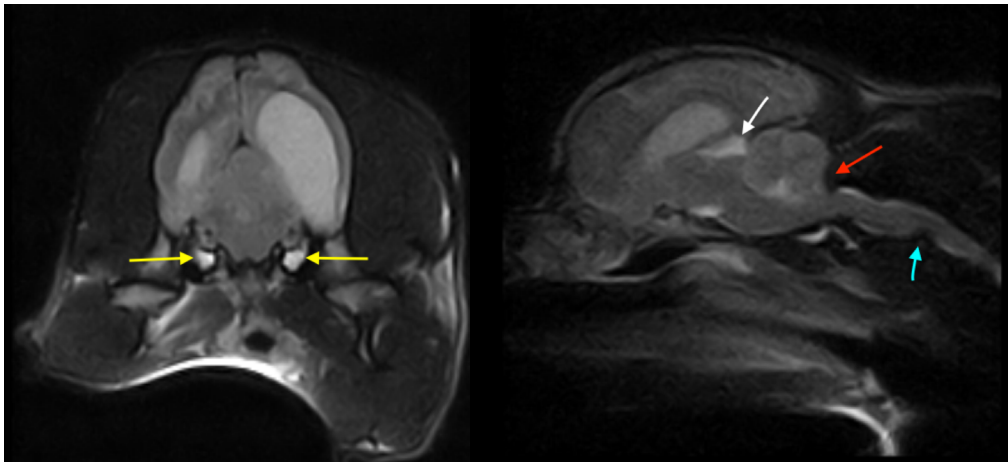
rDVM Physical Exam: wnl

rDVM Neurological Exam: alert, right head tilt, nystagmus ff left, falls right; weak in rear, normal menace responses

Diagnostics: PCV/TS- 38/6.6 **CBC:** 17.29K WBC, 13.49K neutrophils, 1.34K monocytes
Chem- BUN-6, 157 lipase

MRI Review: MRI of the brain was performed. Sequences were obtained both before and after gadolinium administration. There are 164 images for review.

Both tympanic bullae contain T2-weighted (w) hyperintense material (yellow arrows). The right bulla has mixed (hypointense and isointense) characteristics on T1w imaging and there is contrast enhancement. The left bulla has mixed intensity (iso and hyperintensity) on T1w sequences. Contrast enhancement of this bulla cannot be determined due to the hyperintensity on pre-contrast sequences. There is no radiographic evidence of contrast enhancement of the adjacent petrous temporal bone or medulla.



There is moderate to severe generalized ventriculomegaly with a lateral ventricle:brain height ratio of 0.85 (severe > 0.57). The lateral ventricles are asymmetric with the left larger than the right. The middle portion of the ventricular septum is absent.

There is a small supracollicular accumulation of cerebrospinal fluid (formerly called a quadrigeminal cyst) associated with the third ventricle without compression of the cranial cerebellum (white arrow).



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There is a mild Chiari malformation with a “boxy” cerebellum, obstruction of the dorsal craniocervical subarachnoid space (red arrow), and a slight elevation of the cervicomedullary junction.

Sagittal sequences show compression at the C2-3 intervertebral disc space (blue arrow). Transverse sequences do not include this area therefore degree of compression cannot be determined.

Summary:

1. Otitis media bilaterally
2. Suspected right sided otitis interna
3. Moderate to severe generalized ventriculomegaly
4. Supracollicular accumulation of cerebrospinal fluid associated with the third ventricle
5. Mild caudal occipital malformation syndrome (COMS)
6. C2-3 intervertebral disc herniation with cord compression

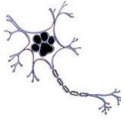
Recommendations: The presenting clinical signs can be explained by the right sided otitis media with suspected otitis interna. Bilateral myringotomy is recommended for removal of the infectious material. Cytology and bacterial culture are recommended. Oral cephalexin should be given pending culture results as there is a likelihood of osteomyelitis of the bullae. Topical ear medications should be used cautiously to avoid permanent deafness. As ear disease is a manifestation of overall skin disease, a consultation with a veterinary dermatologist is recommended.

The ventriculomegaly, while severe, is unlikely to be causing clinical signs. As he is an adult dog, it is also unlikely to be clinical in the future. The supracollicular accumulation of CSF is a mild congenital structural abnormality and likely an incidental finding. The Chiari malformation is mild, but the owners should be questioned as to whether this patient has phantom scratching or neck pain which could indicate a syrinx in the spinal cord caudal to the imaging site. The C2-3 disc herniation should be further evaluated if cranial cervical neck pain is evident on palpation.

Prognosis: good with bilateral myringotomies

General information regarding the conditions listed above:

Congenital ventriculomegaly (hydrocephalus) most commonly occurs in small and toy breed dogs with brachycephalic skull, but there are sporadic reports of mid and large breed dogs being affected. Expected clinical signs include seizures, circling, and learning disabilities. The underlying cause of ventriculomegaly (hydrocephalus) is



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inadequate absorption and not overproduction of CSF. Increased CSF pressure within the ventricles eventually leads to focal destruction of the ependymal lining, compromise of cerebral vessels, damage to periventricular white matter, neuronal injury, and severe white matter atrophy. In affected dogs and cats, attempts to reduce CSF production using glucocorticoids and diuretics offers only temporary improvement of clinical signs and surgical treatment is indicated in most cases. Implantation of a shunt tube provides CSF drainage from the cerebral ventricles to the peritoneal cavity. One study of 36 cases showed that 72% improved. Their complication rate was 22% with occlusion of the shunt, infection, and death reported. Another study of 14 dogs had a median survival time of 320 days for dogs with idiopathic hydrocephalus and a 30% complication rate.

Caudal occipital malformation syndrome (COMS) is a neurological disorder seen most commonly in the Cavalier King Charles spaniel breed. The prevalence of symptoms was recently reported to be 15.4% within this breed. Other small breeds may be affected and a recent study investigated this condition in the American Brussels Griffon. Other terms for COMS include occipital hypoplasia and Chiari-like malformation. COMS refers to malformation of the occipital bone causing overcrowding of the caudal fossa leading to cerebellar herniation, medullary “kinking”, obstruction of the dorsal craniocervical subarachnoid space, and alteration of cerebrospinal fluid flow. This alteration in CSF flow leads to syringomyelia (SM) which are fluid filled cavities within the spinal cord. The most prominent clinical sign of syringomyelia is pain. Pain is most commonly noted in the cervical region, but in some cases, may be intermittent or difficult to localize. Affected dogs may be overly sensitive to touch on one side of the head, neck or shoulder. Additionally, affected dogs tend to scratch frequently on one side of the head, neck or body often without making contact. Pain and scratching are thought to be due to SM affecting the dorsal horn of the spinal cord which is a relay center for sensory information transmission to the brain. Other neurological signs include thoracic or pelvic limb weakness and seizures.

The diagnosis of COMS and SM requires an MRI of the head and neck. Additional sequences may be necessary based on localization of the neurological exam. Concurrent vertebral malformations may also be identified with MRI such as atlantoaxial subluxation or C1 overlapping. Spinal fluid analysis shows an increase in protein and neutrophils if a syrinx is present.

Treatment of COMS and SM involves medical and surgical management. Medical management may be chosen for patients with mild pain or when finances do not allow surgical management. Medical therapy is aimed at decreasing spinal fluid production and alleviating pain. In mild cases, a non-steroidal anti-inflammatory drug (NSAID) combined with gabapentin may be used. The use of furosemide was shown to not prevent further syrinx expansion nor to reduce the size of the syrinx. One study showed a worsening of clinical signs in 56% of those treated medically. Another study showed worsening of neuropathic pain in 75% of dogs. Corticosteroids are also effective in decreasing pain and neurologic deficits by inhibiting pain mediators such as substance P and decreasing CSF production. While corticosteroids may be effective, dogs would require continuous therapy and develop adverse effects such as immunosuppression, weight gain, and skin changes. For these cases, surgical management is indicated.



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Surgical management is also indicated when analgesics do not control pain or when neurological deficits are present. One study found that surgery with a foramen magnum decompression had an 80% success rate with 20% unchanged. While the recurrence rate is reported to be 25-47% the addition of a titanium mesh to reduce scar tissue formation reduced this rate to zero. Another study using a fat graft reported that all 23 dogs improved and none needed a second surgery.

References:

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