



Neurotransmitter

Berkeley's Story

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PRESENTING COMPLAINT

Presented to BVNS for a one month history of lethargy, abnormal behavior and ataxia in all four limbs. She went to her primary veterinarian where blood work was performed and was largely unremarkable, aside from a mild eosinophilia. Multiple medications were tried prior to initial consultation including gabapentin, diazepam and meloxicam, but Berkeley continued to decline.

MEET BERKELEY

Berkeley is a 2-year-old FS Miniature Pinscher.



NEUROLOGICAL EXAM

- Mentation: quiet to obtunded
- Cranial nerves: normal
- Gait: ambulatory with moderate proprioceptive ataxia, compulsively paced/circled around exam room and tripped over the owner multiple times
- Proprioception: absent placing response in right pelvic limb, decreased hopping in all four limbs
- Reflexes: normal
- Hyperesthesia: no spinal pain

NEUROLOCALIZATION

Cerebrum

DIFFERENTIALS

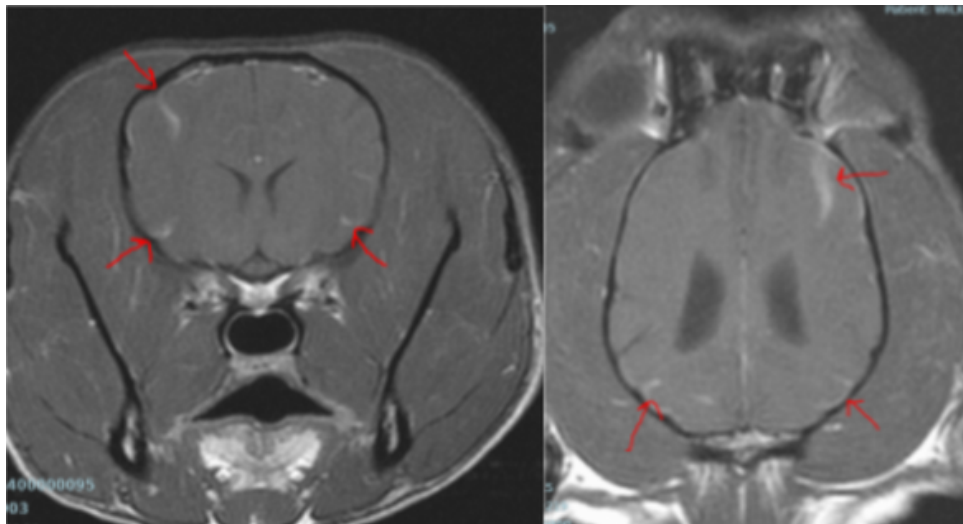
Meningoencephalitis (immune mediated vs. Infectious), less likely neoplastic

RECOMMENDATIONS

- CBC/chemistry
- Brain MRI
- +/- CSF analysis

DIAGNOSTICS

- CBC: moderate eosinophilia 2.37K (normal 0.06-1.23)
- Chemistry: unremarkable
- Brain MRI: Variable meningeal thickening with homogenous contrast enhancement throughout cerebral sulci of frontal, parietal, temporal, and occipital lobes
- **Red arrows represent areas of meningeal contrast enhancement**



CSF ANALYSIS

- Average total nucleated cell count = 37 cells/uL (normal 0-5)
- Cytology (100 cell differential) = 84% eosinophils, 13% monocytes, 2% neutrophils, 1% lymphocytes
- Protein 30-100mg/dL (normal <25)
- Findings consistent with eosinophilic pleocytosis

INFECTIOUS DISEASE TESTING

- Tick panel = negative
- Toxoplasmosis/neospora serology = negative
- Cryptococcal antigen = negative

DIAGNOSIS

Eosinophilic meningoencephalitis of unknown origin

TREATMENT

- Prednisone 5mg tablets: 1.5 tablets PO every 24 hours until infectious disease testing returns
 - Increased to 2.5 tablets PO every 24 hours after negative infectious disease results (1.8mg/kg/day)
- Clindamycin 75mg capsules: 1 capsule PO every 12 hours until infectious disease testing returned
 - Discontinued after negative infectious disease results
- Cytosar 100mg/m² subcutaneously

PATIENT UPDATE

- Normal neurologic examination at one month recheck, however, Berkeley was still not quite herself at home
 - Cytosar dose was increased to 200mg/m² (split into two doses)
- Normal neurologic exam at two-month recheck, Berkeley is more herself at home and approximately 80% back to normal
 - Cytosar dose continued at 200mg/m²
- Once Berkeley plateaus with her neurologic improvement, her prednisone dose will be slowly tapered

EOSINOPHILIC MENINGOENCEPHALITIS

Eosinophilic meningoencephalitis can be caused by infectious organisms or non-infectious causes. When infectious diseases have been ruled out, eosinophilic meningoencephalitis of unknown origin is then diagnosed. It is suspected to be an immune-mediated disease process, although the exact cause remains unknown. This is considered a less common subset of the other meningoencephalitides of unknown origin (MUO). This disease is more commonly diagnosed in young, large-breed dogs, but it has been diagnosed in small breeds as well. Diagnosis is made via specific MRI findings, eosinophilic pleocytosis, and negative infectious disease testing. Many dogs diagnosed with this disease will also have a peripheral eosinophilia. Treatment is focused on reducing inflammation and immunosuppression, typically with steroids alone or a combination of steroids, cytosar, and sometimes other immunosuppressives. The prognosis and response to treatment for eosinophilic meningoencephalitis of unknown origin tends to be better compared to the other MUOs.

TAKE HOME POINTS

- 1) Eosinophilic meningoencephalitis of unknown origin is less common than the other types of immune mediated meningoencephalitides, but prognosis may be better.
- 2) Diagnosis is based on MRI findings, eosinophilic pleocytosis, and negative infectious disease testing.
- 3) Treatment is very similar to the other MUOs, however, some dogs may do well with steroids alone.
- 4) Dogs will frequently have a peripheral eosinophilia.



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