

What Is Your Neurologic Diagnosis?

Signalment: Five-year-old spayed Border Collie.

History: One month ago, would not jump on bed and sometimes held head down. One week ago, would not lift head, ventral neck muscles twitched. Given muscle relaxants with minimal improvement.

Physical examination: Normal.

Neurologic examination:

Key:	4 = Exaggerated, clonus	1 = Diminished
	3 = Exaggerated	0 = None
	2 = Normal	NE = not evaluated

Observation:

Mental	Alert	X	Depressed		Disoriented		Stupor		Coma	
Posture	Normal	X	Head tilt		Tremor		Falling			
Gait	Normal	X	Ataxia		Pelvic limbs		All 4		Circling	
Paresis	Pelvic limbs	X	Tetra		Hemi		Mono			
Other	Twitching of neck muscles. Holds head down.									

Postural reactions:

	LF	RF	LR	RR
Wheelbarrow	2	2		
Hopping	2	2	2	2
Ext postural thrust			2	2
Proprioceptive Pos	2	2	2	2
Hemistand/walk	2	2	2	2
Placing-tactile	2	2		
Placing-visual	2	2		

Spinal reflexes:

	LF	RF	LR	RR
Quadriceps			2	2
Extensor carpi	2	2		
Flexion	2	2	2	2
Crossed extensor	0	0	0	0
Perineal			2	2

Cranial nerves:

	L	R		L	R	Comments CN
II, VII - Vision menace	2	2	VIII - Nystagmus, resting	2	2	
II, III - Pupils resting	2	2	VIII - Nystagmus, change	2	2	
Stim L	2	2	V - Sensation	2	2	
Stim R	2	2	VII - Facial mm	2	2	
II - Fundus	2	2	V, VII - Palpebral reflex	2	2	
III, IV, VI - Strabismus, resting	2	2	IX, X - Gag	2	2	
III, IV, VI, VIII - Strabismus, position	2	2	XII - Tongue	2	2	

Sensation: (Locate and describe abnormal)

Hyperesthesia	Pain induced by deep palpation, flexion, and extension of neck.
Superficial pain	2
Cutaneous reflex	2
Deep pain	2

What is the problem? Where is the lesion? What are the most probable causes of this problem? What is your plan to establish a diagnosis? Please turn page.

Assessment:**Anatomic diagnosis:**

Problem	Rule out location
Cervical pain.	C1-C5 meninges, nerve root, or vertebral column.
	Cannot exclude musculoskeletal disease.

Likely location of one lesion:

C1-C5, meninges, vertebral column. No detectable neurologic involvement.

Etiologic diagnosis:

Rule out disease process	Diagnostic plan (in order of priority)
Herniated intervertebral disk. Inflammatory disease, such as diskospondylitis or meningitis. Neoplasia. Myositis.	Laboratory profile (CBC, chemistries, urinalysis) to establish general health before anesthesia and possibly detect systemic disease, especially inflammation. Creatine kinase activity could be determined to help rule out myositis, but it is of low probability and the cost may not be justified.
	Thoracic radiography: (option) check for metastatic disease.
	CSF analysis: rule out meningitis. If WBC count is high, myelography usually is not indicated.
	Survey radiography of cervical vertebral column: rule out diskospondylitis, possibly diagnose herniated disk.
	Myelography: rule out herniated disk.
	Electromyography: (option) to rule out myositis, but is low probability and could be done after other tests if results are negative.

Comments: Myositis is unlikely because the pain is limited to the cervical area. Herniated intervertebral disks are common, but not in this breed. Diskospondylitis and meningitis can cause cervical pain, although meningitis usually causes more generalized pain. Neoplasia is possible, but not common in this area, and the dog is only 5 years old. The sequencing of tests may be influenced by cost, risks, and probability of making the diagnosis. Evaluation of CSF must be done before myelography, because contrast material causes an inflammatory reaction, masking any abnormalities. The only time we don't recommend a CSF before myelography is in classic acute parietic, high-risk breeds (eg, Dachshund, Pekingese) that are admitted as after-hour emergencies. The EMG might be helpful in locating a root lesion and to diagnose myositis. It can be done after myelography if results of the latter are negative. Survey radiography always is performed before myelography. If diskospondylitis is found, myelography is not done unless decompressive surgery is indicated by the clinical signs.

Test results:

Laboratory data: Hematology—Normal except for WBC (13,300 WBC/ μ l; 9,842 neutrophils, 2,394 lymphocytes, 665 monocytes, and 399 eosinophils). Platelets 167,000/ μ l. **Urinalysis** (cystocentesis)—Sp gr, 1.058; pH 7.0: Protein, trace; RBC, 5 to 10/ μ l; WBC, 20 to 30 / μ l; some triple phosphate crystals. **CSF**—45.3 mg protein/dl; 1 WBC/ μ l; 156 RBC/ μ l; differential (cytocentrifuge), 2 monocytes, 1 lymphocyte.

Electrodiagnostic data: Electromyography—Not done.

Radiographic data: Lateral survey radiography revealed greater than normal opacity in the intervertebral foramen of C2-3. The opacity could not be seen on the ventrodorsal view. The intervertebral disk space of C2-3 contained mineralized disk material. Myelography revealed dorsal deviation of the spinal cord at C2-3. On the ventrodorsal view, the dye column was widened uniformly at C2-3. Myelography was done to provide definitive location of the compression for the ventral decompression surgery that would be performed.

Presumptive diagnosis: Herniated intervertebral disk at C2-3. The disk is probably on the midline, based on the ventrodorsal view of the myelogram.

Prognosis with treatment: Ventral decompressive surgery is indicated. Prognosis is good for complete recovery. Many dogs have less pain the day after surgery. Fenestration of adjacent disks will reduce probability of recurrences at other spaces.

Prognosis without treatment: Confinement with complete restriction of exercise might result in resolution of the problem. Recovery would probably take several weeks, and recurrences are common.

Therapeutic plan: Ventral decompression of C2-3, fenestration of adjacent disks.

Outcome: Ventral decompression of C2-3 was done, with removal of disk material from the vertebral canal. Disks at C3-4 and C4-5 were fenestrated. Evidence of pain was less the day after surgery. Neurologic deficits were not found. The dog was discharged the third day after surgery. Instructions were to restrict exercise for 3 weeks. Sutures were removed after 1 week. At recheck 3 weeks later, the owners reported having difficulty keeping the dog quiet. Neither signs of pain nor other abnormalities were found on examination.

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