



What Is Your Neurologic Diagnosis?

A 10-year-old 4-kg (8.8-lb) neutered male domestic shorthair cat was evaluated because of a 3-month history of slowly progressive left thoracic limb lameness and weakness, followed by the additional onset of bilateral pelvic limb ataxia the week prior to evaluation. Radiography of the left thoracic limb performed

previously had not revealed any major orthopedic abnormalities. Oral administration of meloxicam^a during the month prior to evaluation did not result in any notable improvement. General physical examination findings were unremarkable; a neurologic examination was also performed.

Neurologic examination

Observation

Mental	Alert	X	Depressed		Disoriented		Stupor		Coma	
Posture	Normal	X	Head tilt		Tremor		Falling			
Gait	Normal		Ataxia		Pelvic limbs		All 4	X	Circling	
Paresis	Pelvic limbs		Tetra	X	Hemi		Mono			
Other										

Key: 4=exaggerated, clonus; 3=exaggerated; 2=normal; 1=diminished; 0=none; NE=not evaluated

Postural reactions

	LF	RF	LR	RR
Wheelbarrow	1	2		
Hopping	1	2	1	1
Ext postural thrust			NE	NE
Proprioceptive pos	1	2	1	1
Hemistand/walk	1	2	1	1
Placing-tactile	1	2		
Placing-visual	2	2		

Spinal reflexes

	LF	RF	LR	RR
Quadriceps			2	2
Extensor carpi	1	2		
Flexion	0	2	2	2
Crossed extensor	NE	NE	NE	NE
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 flex	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	2	
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 the page.

Assessment

Anatomic diagnosis

Problem	Rule out location
Left thoracic limb paresis with decreased postural reactions and reduced segmental spinal reflexes in this limb	Lateralization of spinal cord to the left; C6–T2 spinal cord segments or left brachial plexus and peripheral nerves.
Pelvic limb ataxia with decreased postural reactions and normal segmental spinal reflexes in these limbs	The C1–C5, C6–T2, or T3–L3 spinal cord segments. The absence of cranial nerve deficits or clinical signs of brain disease make a brain lesion unlikely.

Likely location of one lesion

Considered in combination, the deficits (pelvic limb ataxia with intact spinal reflexes and left thoracic limb paresis with decreased spinal reflexes) are best explained by neurolocalization of a lesion to the C6–T2 spinal cord segment, lateralized to the left.

Etiologic diagnosis—Differential disease processes included neoplasia (primary [eg, peripheral nerve sheath tumor, lymphoma, osteosarcoma, glial cell tumor, or meningioma] or metastatic), inflammatory or infectious diseases (eg, toxoplasmosis, feline infectious peritonitis, or fungal infection), and less likely intervertebral disk herniation. The diagnostic plan included a CBC, serum biochemical analyses, and evaluation of a CSF sample (to rule out CNS disease or other generalized inflammatory or infectious disease); thoracic radiography (to identify evidence of metastatic disease); MRI (with and without contrast agent administration) of the cervical portion of the vertebral column (to rule out the presence of a mass or pathological change within the spinal cord, spinal canal, or nerve roots), and electromyography of the muscles of the left thoracic limb (to evaluate for evidence of any spontaneous electrical activity that would suggest denervation).

Diagnostic test findings—The CBC, serum biochemical analyses, thoracic radiography, and electromyography revealed no important abnormalities. Magnetic resonance imaging^b of the cervical portion of the vertebral column revealed a focal, intramedullary spinal cord lesion at the level of the C7 vertebral body. The size of the lesion was > 50% of the spinal cord diameter at some levels and partially lateralized to the left. On transverse images, the spinal cord was widened at the level of the lesion, with a reduction in the surrounding CSF signal. Compared with the appearance of unaffected spinal cord parenchyma, the lesion was hyperintense on T2-weighted images and iso- to hypointense on T1-weighted images. There was marked ring enhancement following IV administration of gadopentetate dimeglumine^c (Figure 1). A sample of CSF obtained by lumbar puncture revealed albuminocytologic dissociation; the CSF total protein concentration was 160 mg/dL (laboratory reference range, < 35 mg/dL), and the CSF nucleated cell count was 0 cells/ μ L (laboratory reference range, 0 to 5 cells/ μ L). On the basis of the MRI and CSF analysis findings, an intramedullary neoplastic process was considered most likely.

Comments

Neoplasia affecting the spinal cord represented 56 of 205 (27%) and 25 of 92 (27%) cases in 2 studies^{1,2} of cats with spinal cord disease, with lymphoma being the most common diagnosis. The prognosis is generally poor for cats with spinal cord tumors, but there are only limited studies assessing the therapeutic options. Surgical removal is most often reserved for extramedullary spinal cord tumors and was not considered possible in the case described in the present report. Chemotherapy is not frequently administered to cats with spinal cord tumors, with the exception of cats with spinal lymphoma; in a previous report,³ administration of cyclophosphamide, vincristine, and prednisone in 6 cats resulted in a complete remission rate of 50% and a median duration of remission of 14 weeks. Radiation therapy has been used in a limited number of cases.⁴ The owner of the cat of this report declined any treatment and elected euthanasia. At postmortem examination, gross pathological findings were limited to the caudal cervical portion of the spinal cord. At the level of the C7 spinal cord segment, the spinal cord was grossly thickened (mainly affecting the left and ventral aspect) and had a grayish color. Histologic examination revealed a poorly demarcated neoplastic process that affected the ventral gray and white matter of the spinal cord and was composed of sheets of round cells with abundant cytoplasm, small round nuclei with smudged chromatin, and inconspicuous nucleoli. The final diagnosis was spinal cord oligodendroglioma.

Glial tumors affecting the spinal cord are extremely rare in cats, and only 2 cats with spinal cord oligodendrogliomas have been reported in the veterinary medical literature, to our knowledge; both cats were identified in a large retrospective case series of spinal cord tumors in cats.^{1,5-8} In that study,⁵ 9.4% of the 85 cats with spinal cord tumors had glial tumors and only 2.4% of the cases involved spinal cord oligodendroglioma.⁵ Interestingly, of the 8 glial tumors, 6 affected the cervical spinal cord segments.⁵ With the exception of 1 cat, all the cats with spinal cord glial tumors were 9 to 10 years old at the time of diagnosis.⁵⁻⁸ The MRI findings reported for the cat of this report were similar

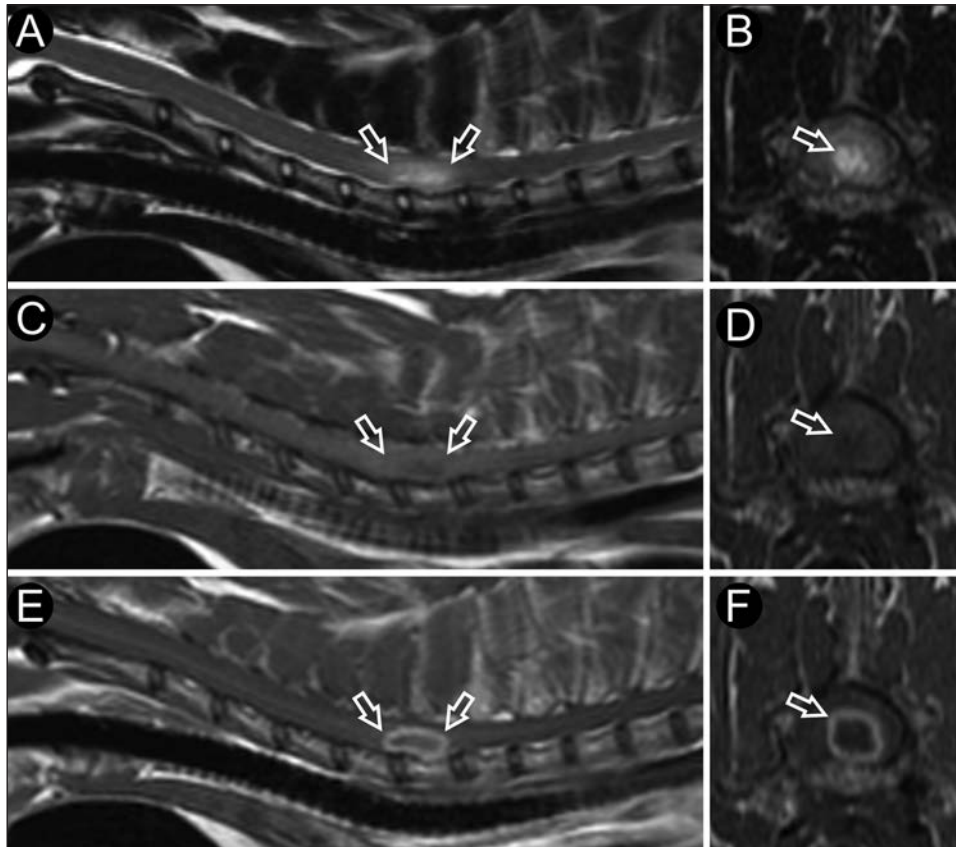


Figure 1—Sagittal (A, C, and E) and transverse (B, D, and F) plane MRI images of the cervical portion of the vertebral column of a 10-year-old domestic short hair cat that was evaluated because of a 3-month history of slowly progressive left thoracic limb lameness and weakness, followed by the additional onset of bilateral pelvic limb ataxia the week prior to evaluation. At the level of C7, there is a focal intramedullary mass involving over 50% of the spinal cord diameter (arrows). Compared with the appearance of unaffected spinal cord parenchyma, the lesion is hyperintense on T2-weighted images (A and B), predominantly hypointense on T1-weighted images (C and D), and associated with marked peripheral contrast enhancement following IV administration of gadolinium on the T1-weighted images (E and F).

(including ring contrast enhancement) to those for 1 of the 2 cats with spinal cord oligodendroglioma in the other study.⁵ Oligodendrogliomas should be included in the differential diagnosis list when a solitary, intramedullary, ring-enhancing spinal cord mass is identified via MRI, particularly in the cervical region.

- Metacam, Boehringer-Ingelheim, Ingelheim/Rhein, Germany.
- 1.5-Tesla Magnetom, Siemens, Erlangen, Germany.
- Magnevist, Bayer HealthCare Pharmaceuticals, Newbury, Berkshire, England.

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This report was submitted by Rodrigo Gutierrez-Quintana, MVZ, MVM; Jacques Penderis, BVSc, MVM, PhD; and Thomas J. Anderson, BVM&S, MVM, PhD; from the School of Veterinary Medicine, College of Medical, Veterinary and Life Sciences, University of Glasgow, Bearsden Road, Glasgow, G61 1QH, Scotland.

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