What Is Your Diagnosis?

A 3-year-old 30-kg (66-lb) sexually intact female Standard Poodle was referred for further evaluation of a 3-month history of paraparesis. No abnormalities were detected on physical examination other than mild generalized muscle atrophy. Findings on CBC and serum biochemical analysis were within reference limits. On neurologic examination, the dog had ambulatory paraparesis with proprioceptive ataxia in the pelvic limbs. Postural reactions were delayed in the pelvic limbs, worse on the right side, and segmental spinal reflexes were intact. No signs of pain were elicited on palpation of the vertebral column. On the basis of these abnormalities, the lesion was localized to the T3-L3 spinal cord segments. Magnetic resonance imaging of the thoracic and lumbar vertebral column was performed (Figure 1).

Figure 1—Sagittal (A) and transverse (B) T2-weighted, sagittal (C) and transverse (D) T1-weighted, sagittal strongly T2-weighted (myelographic; E), transverse T2*-weighted gradient recalled echo (F), and sagittal (G) and transverse (H) postcontrast T1-weighted fat saturated MRI images of a 3-year-old 30-kg (66-lb) sexually intact female Standard Poodle with a 3-month history of paraparesis.

History

A 3-year-old 30-kg (66-lb) sexually intact female Standard Poodle was referred for further evaluation of a 3-month history of paraparesis. No abnormalities were detected on physical examination other than mild generalized muscle atrophy. Findings on CBC and serum biochemical analysis were within reference limits. On neurologic examination, the dog had ambulatory paraparesis with proprioceptive ataxia in the pelvic limbs. Postural reactions were delayed in the pelvic limbs, worse on the right side, and segmental spinal reflexes were intact. No signs of pain were elicited on palpation of the vertebral column. On the basis of these abnormalities, the lesion was localized to the T3-L3 spinal cord segments. Magnetic resonance imaging of the thoracic and lumbar vertebral column was performed (Figure 1).

Determine whether additional imaging studies are required, or make your diagnosis from Figure 1—then turn the page →

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Diagnostic Imaging Findings and Interpretation

A well-circumscribed, circular, intramedullary lesion is associated with the spinal cord at the caudal aspect of T8. The lesion is of intermediate intensity on T2-weighted images and mildly hyperintense on T1-weighted images, causes focal circumferential attenuation of signal from the subarachnoid space on the myelographic sequence, does not have susceptibility artifacts on T2*-weighted images, and has strong ring enhancement with a nonenhancing center (Figure 2). On sagittal T2-weighted and myelographic images, there is an additional finding of diffuse intramedullary hyperintensity that extends both cranially and caudally from the circular lesion at T8 and is most consistent with spinal cord edema. Differential diagnoses considered for this case included intramedullary neoplasia (lymphoma, ependymoma, glioma, or hemangioblastoma) or, less likely, granuloma.

Treatment and Outcome

Cerebral spinal fluid was collected by cisternal puncture. No abnormalities were detected on cytologic evaluation of the CSF sample. The possibility of surgical exploration and attempted lesion removal or biopsy was discussed but was declined by the owners, and the dog was euthanatized. At necropsy, a 7-mm-diameter, smooth, firm, white nodule surrounded by a red rim was identified within the spinal cord at T8, focally effacing approximately 90% of the medulla. Microscopic examination of the tumor and immunohistochemistry results were consistent with hemangioblastoma.

Comments

Hemangioblastomas are rare, benign, highly vascular tumors of the CNS. They occur most commonly in the caudal fossa in people; spinal cord lesions are identified in 75% to 25% of affected patients.1,2 Most cases are sporadic; however, 23% to 38% are associated with familial cerebello-retinal angiomatosis (ie, Von-Hippel Lindau syndrome), a familial multisystem cancer disorder.1,3,4 Patients who have familial cerebello-retinal angiomatosis have a higher risk of developing spinal cord lesions, compared with those patients that have sporadic hemangioblastoma.2

To the best of our knowledge, only 4 cases of spinal hemangioblastoma have been reported for dogs ranging from 2 to 8 years of age,5–8 and a gene mutation or familial association has not been shown. In 3 dogs5–7 the lesion was intramedullary as in the dog of the present report, and in 1 dog the tumor was intradural-extramedullary with paraspinal extension.8 Findings on MRI reported5,6 for 2 dogs and in people4,9 with intramedullary hemangioblastomas are similar to what was found in the dog in the present report, with a focal, round, and well-circumscribed ring-enhancing mass and presumptive peritumoral edema.

Hyperintensity of the tumor on T1-weighted images is not a typical feature in people but has been
described for 1 dog with intramedullary and 1 dog with intradural-extramedullary hemangioblastoma. Generally, differential diagnoses for hyperintense masses on T1-weighted images include fat- or melanin-containing lesions and certain stages of hemorrhage. These differential diagnoses were not considered in the dog of the present report because the degree of hyperintensity on T1-weighted images was less than that seen with any of these conditions, the lesion did not suppress on a fat suppression sequence (not shown), strong hypointensity was not found on T2-weighted images as expected with the presence of melanin, and the absence of susceptibility artifacts on T2*-weighted images made hemorrhage unlikely. Other intramedullary tumor types or a granulomatous lesion could however not be excluded. Unfortunately, surgical exploration and attempted tumor removal was declined in the dog of the present report. Microsurgical resection is considered the treatment of choice for spinal hemangioblastomas in people, and successful tumor removal with clinical improvement and long-term control of the disease has been reported for 2 dogs.

In conclusion, hemangioblastoma should be considered as a differential diagnosis in a dog with a well-circumscribed intramedullary spinal cord mass.

References