What Is Your Diagnosis?

History

A 10-year-old neutered male large mixed-breed dog was evaluated for acute onset of blindness of 1 week’s duration. No abnormalities were detected on physical examination. The menace response and dazzle reflex were absent in both eyes, and the dog was unable to navigate a lighted examination room. The pupils were symmetrically dilated and unresponsive to direct and indirect light stimulation. Except for mild alterations in reflectivity within the tapetal retina, the remainder of the ophthalmic examination, including the appearance of the optic nerves, was considered normal. Abnormalities detected on serum biochemical analyses included high serum alkaline phosphatase activity (641 U/L; reference range, 5 to 131 U/L) and high serum triglycerides concentration (418 mg/dL; reference range, 29 to 191 mg/dL). A diagnosis of sudden acquired retinal degeneration syndrome was considered likely on the basis of these findings, and scotopic electroretinography was performed. The amplitudes were asymmetrical (80 and 153 μV), but insufficiently low to account for the degree of observed vision loss. Ruling out a primary retinal disease in this manner suggested a retrobulbar nerve or brain lesion, which could be inflammatory or neoplastic in nature. Results of serologic tests for endemic infectious diseases were negative. Magnetic resonance imaging of the brain before and after IV administration of contrast agent (gadolinium) was performed during general anesthesia (Figure 1).

Determine whether additional imaging studies are required, or make your diagnosis from Figure 1—then turn the page.
An ACTH-secreting pituitary adenoma is the most common cause of hyperadrenocorticism in dogs. Most of these are probably microadenomas, but 10% to 50% of the cases of pituitary-dependent hyperadrenocorticism in dogs may be attributable to macroadenomas, which are visible by advanced imaging techniques. Dogs with pituitary macroadenomas commonly have polyuria, polydipsia, and polyphagia, and may also have neurologic signs, including blindness. Clinical signs of hyperadrenocorticism were not observed by the owners of the dog reported here; however, further questioning indicated that the dog had unlimited access to a swimming pool, from which it drank unknown amounts of water. The high serum alkaline phosphatase activity and triglycerides concentration were also compatible with hyperadrenocorticism.

Surgical intervention, in the form of microsurgical transsphenoidal hypophysectomy or radiation therapy, has been performed with some success for pituitary tumors in dogs. Hypophysectomy in dogs has induced hypernatremia, keratoconjunctivitis sicca, diabetes insipidus, and hypothryoidism. Irradiation is effective for treatment of pituitary macroadenomas and complications are acceptably low with small tumor sizes. Larger tumor size and more severe preoperative neurologic signs adversely affect prognosis. Presently, radiation therapy is the treatment of choice and was offered to the owners of this dog. All therapeutic intervention was declined because the large tumor size resulted in a guarded overall and visual prognosis.

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