What Is Your Diagnosis?

A 9-year-old spayed female Golden Retriever was referred for evaluation of right forelimb lameness of 5 months’ duration. Initial treatment by the referring veterinarian included oral administration of prednisone (20 mg q 12 h for 1 week, 20 mg q 24 h for 1 week, and 20 mg every other day for 1 week), which resulted in clinical improvement. Three months later, the lameness returned, but it did not diminish after the same treatment regimen, so the dog was referred for evaluation.

On physical examination, the dog had a severe to moderate weight-bearing lameness of the right forelimb with associated muscle atrophy. A 5 × 7-cm mass was palpated caudolateral to the right shoulder joint. The dog developed signs of mild pain on manipulation of the limb. Mild arthritic changes without bony lysis were evident on radiographic views of the right shoulder joint that were provided by the referring veterinarian.

Results of a neurologic examination were unremarkable. Because of substantial muscle atrophy of the proximal portion of the right forelimb, electromyography (EMG) was performed after the dog was anesthetized. Marked fibrillation potentials, positive sharp waves, and bizarre high-frequency discharges in the lateral head of the triceps muscle and the biceps muscle were detected. When the concentric EMG needle was passed through the lateral head of the triceps muscle, there was no apparent electrical activity (ie, no insertional activity), which is indicative of either severe muscle fibrosis or a space-occupying nonmuscular mass. Magnetic resonance imaging (MRI) of the right shoulder joint was performed for T1-weighted (before and after IV administration of gadodiamide) and T2-weighted axial, sagittal, and dorsal planes (Figure 1).

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

Figure 1—T2-weighted dorsal plane magnetic resonance image of the shoulder regions of a 9-year-old dog with a 5-month history of lameness in the right forelimb.
DIAGNOSTIC IMAGING FINDINGS AND INTERPRETATION

A large mass, hyperintense to muscle, is visible along the lateral aspect of the proximal portion of the right humerus. Additional short tau inversion recovery images in the axial plane were obtained (Figure 2). The mass appears to originate within the fascial planes between the lateral and long heads of the triceps muscle and extends proximally to the caudal aspect of the shoulder joint, following the fascial plane between the infraspinatus and long head of the triceps brachii muscles. The mass extends caudomedially to the shoulder joint between the subscapularis muscle and the subcapital fossa. Partial peripheral contrast enhancement is evident around the mass. Osseous involvement is not visible. Differential diagnoses included nerve sheath tumor, histiocytic sarcoma, fibrosarcoma, and hemangiopericytoma.

COMMENTS

Physical examination findings, EMG data, and MRI changes were consistent with a soft tissue neoplasm. A fine-needle aspirate was obtained, and the cytologic interpretation was consistent with round-cell neoplasia. Tumor staging included 3-view thoracic radiography and abdominal ultrasonography. Because of the presence of a suspicious lesion in the thoracic views, computed tomography was performed. No metastatic lesions were detected. Histologic examination of an incisional biopsy specimen of the tumor revealed histiocytic sarcoma (HS).

In dogs, HS is a tumor of myeloid dendritic cell origin that can be in a localized or disseminated form. Localized tumors commonly develop in the subcutis, joints, or underlying tissue of extremities but have also been found in the bone marrow, brain, spleen, lung, and nasal cavity. The metastatic lesions of localized HS are usually found in the regional lymph nodes associated with the primary mass. Disseminated HS is an aggressive multisystemic form of this disease that affects lung, spleen, liver, bone marrow, and lymph nodes and is associated with a grave prognosis. Median survival time for dogs with disseminated HS is 5.3 months following diagnosis.

The most commonly affected breeds are Bernese Mountain Dogs, Rottweilers, Doberman Pinschers, and retrievers. When determining whether HS has metastasized to internal organs, computed tomography is more sensitive than thoracic radiography for diagnosing pulmonary metastasis. In addition, ultrasonography displays characteristic hypechoic nodules within the splenic parenchyma. However, other diseases are associated with similar signs requiring further diagnostics to definitively diagnose HS.

Treatment for localized HS involves removal of the tumor with wide margins. If this is not possible and the tumor is localized to an extremity, then amputation is an option. Radiotherapy is recommended when complete surgical removal is not possible. Because of the location of the tumor and suspected peripheral nerve involvement in the dog of this report, complete surgical removal was not possible, and amputation was declined. Fractionated radiotherapy (16 X 3-Gy fractions) for a total dose of 48 Gy was administered to the dog. On completion of radiotherapy, the lameness had resolved and chemotherapy with lomustine (70 mg/m²) was started to prevent metastasis. Four months after radiation, MRI revealed complete resolution of the tumor, and the dog had no signs of lameness.