Case 14
Histiocytic sarcoma rising from the dorsal root ganglia in 2 locations of the spinal column of a dog

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Signalment and History: A 12 year old, female spayed Labrador Retriever mix presented to the Oklahoma State University Teaching Hospital for hindlimb paralysis of 9 days duration. The referring veterinarian prescribed a muscle relaxer, steroid, antibiotics and a gastric protectant, but the patient did not improve and was brought to the OSU VTH. On physical exam the patient was bradycardic, with a respiratory rate of 108 and SPO2 of 90-94. The patient exhibited bilateral hindlimb paralysis with no evidence of deep pain perception. Hindlimb reflexes were normal, but abdominal palpation revealed a large flaccid bladder. Radiographs showed moderate spondylosis of T2-T3 and T9-T13. The patient declined rapidly and humane euthanasia was elected.
Gross Findings: The hindlimb muscles were diffusely and moderately atrophied, but internal organs were otherwise within normal limits. Upon dissection of the spinal column, there were two (2) multifocal, oblong, pale to tan, multi-lobulated masses extending from the dorsal root ganglia which expanded the epidural space at the level of T3-T4 and the cauda equina. Each mass corresponded to a focally extensive region of grossly visible spinal cord compression.
Histopathologic Findings: The ganglia and adjacent epidural connective tissue overlying the spinal cord at the level of T3-T4 and the cauda equina was effaced by large sheets of neoplastic cells that vary from spindloid to polygonal in shape and were supported by a thin fibrovascular stroma. The cells were highly pleomorphic, with abundant amounts of eosinophilic cytoplasm. Nuclei were round to ovoid, with vesiculate chromatin, karyomegaly, and numerous multinucleated cells. Mitoses averaged 3-4 per single high powered field (400x). This neoplasm expanded to the point of compressing a focally extensive region of the spinal cord, which contained a large number of markedly dilated and brightly eosinophilic axons (spheroids), as well as numerous dilated myelin sheaths that contain large foamy gitter cells (digestion chambers). Within the gray matter, small numbers of scattered neurons are shrunken, with hypereosinophilic cytoplasm and condensed nuclei (neuronal necrosis).
Diagnosis: Multicentric epidural histiocytic sarcoma with myelin and axon (Wallerian) degeneration
Additional Findings: Neoplastic cells stain diffusely positive with CD18 (histiocyte marker) and Iba1 (ionized calcium binding adaptor molecule 1; microglia/macrophage marker), and stain negative for S-100 and GFAP (neural tissue markers).
Comments: These results indicate a rare tumor composed of neoplastic cells of the macrophage lineage that we suspect arose from resident macrophages or microglia within the dorsal root ganglia. The expansile growth of this neoplasm directly caused compression and Wallerian degeneration of the spinal cord, resulting in the clinical sign of hindlimb paralysis.