Spinal Neurofibroma in a Sheep

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The common neoplasms of sheep include intestinal adenocarcinoma [1, 6, 14] and lymphosarcoma and hepatic carcinoma [1, 5, 14]. There are few reports of neoplasms arising in nervous tissue in sheep. Abattoir survey data generally do not mention tumors of the central nervous system [1, 3, 11, 14]. Review articles also lack information on central nervous system tumors of sheep [8, 12, 13]. Meningioma, perineural fibroblastoma and adventitial sarcomas [9], cerebral hemangioma astrocytoma and intercostal neurofibroma [4] and spinal melanoma [2] have been reported in sheep.

A 9-month-old female Hampshire sheep was submitted to the School of Veterinary Medicine’s Diagnostic Laboratory, Oregon State University. For the previous month the sheep had refused to stand. The owners had drenched the sheep with egg yolk and sugar, and had provided hay and oats. At necropsy there was a firm white-tan 2- to 3-centimeter ovoid nodule on the ventral surface of the anterior cervical spinal cord at the atlantal-occipital articulation (fig. 1). Nerves did not extend from the tumor. On section, the tumor’s expansion had resulted in severe compression atrophy of the adjacent spinal cord (fig. 2). Tissue was fixed in 10% buffered formalin and hematoxylin and eosin (HE)-stained 6-micrometer sections were prepared.

The tumor was composed of numerous interlacing bundles of elongate basophilic nuclei embedded in an abundant eosinophilic cytoplasmic matrix (fig. 3). Cell borders were not distinct. The nuclei varied in chromatin density, but nucleoli and mitotic figures were uncommon. Nuclei were consistently aligned in parallel arrays, but palisading was rare. Special stains showed a moderate amount of collagen, mainly restricted to the edges of the cell-rich anastomosing bundles. Reticulin was not prominent. There was no evidence of necrosis, hemorrhage, mineralization, inflammation or encapsulation. Ultrastructural examination of formalin-fixed tissues was unrewarding because of fixation artifacts.

Fig. 1: Neurofibroma on ventral surface of brain stem.
Fig. 2: Transverse section of neurofibroma; compression of spinal cord.

Fig. 3: Spinal neurofibroma from sheep. Interlacing bundles composed of elongate basophilic nuclei in eosinophilic matrix. HE.

Our diagnosis was neurofibroma, but the morphologic distinction between schwanномa and neurofibroma can be difficult [7, 10]. Histogenetically, Schwann cell tumors and mesodermal (endoneural, perineural and epineural) tumors are distinct, but until the histogenetic difference is correlated with distinct biologic behavior, the arguments will be interesting, if not meaningful. Although food animals are killed at young ages a variety of spontaneous neoplasms have been reported in cattle, sheep and pigs [4, 5, 13, 15]. Continued efforts in postmortem examination of young food animals may show a greater incidence of neoplasms, including neural tumors, than is currently appreciated.

References
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