

Case Number: CC134

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Signalment: Female, juvenile axis deer (*Axis axis*; synonym spotted deer or chital)

History: This juvenile axis deer was thought to be the offspring of individuals that escaped, or were released, during a hurricane in south Mississippi. The Department of Wildlife was notified that a solitary deer had been seen, which was in poor nutritional condition and had prominent facial swellings. It was immobilized and examined. At that time, the deer had mucus, pus, blood, and clear fluid draining from its nares as well as discharge accumulating around both eyes. Masses were evident over both sinuses, and the deer appeared to be malnourished. Because of its poor condition it was euthanized and submitted for evaluation.

Gross Description: The deer was minimally autolyzed and in poor nutritional condition with no notable fat stores. There was a heavy ectoparasite burden consisting primarily of louse flies. Two bulbous enlargements were present in the area of the nasal sinuses. The left lesion was 7 X 3 X 4 cm, and the right was 7 X 3 X 5 cm. On cross section, the nasal turbinates and septum were intact, but the overlying mucosa was diffusely thickened. The resulting enlargement had caused erosion of the frontal bone and protrusion of the mucosa into the overlying subcutaneous tissue, resulting in the external protrusion previously described. The lungs had multifocal areas of atelectasis, emphysema, and reddening, and one nematode was present in the lungs (*Dictyocaulus* spp). The rumen contained approximately 500 ml of liquid digesta, and a heavy burden of *Haemonchus* sp. was present in the abomasum. Approximately 1 L of dark digesta is present throughout the intestinal tract, and the rectum contained normal feces. No additional abnormalities were recognized.

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Histopathology: The slide includes four sections of nasal conchae in which the subepithelial tissues are expanded by densely cellular infiltrates of basophilic round cells. In some samples the infiltrate elevates the variably eroded or ulcerated mucosa, expanding the lamina propria 0.5 mm to 0.7 mm. In other samples the subepithelial tissues are more significantly expanded, up to 4.5 mm thick, and the submucosa is not evident. The majority of the tissue is replaced by sheets of large, variably sized round cells, with scant fibrovascular stroma. These cells have moderate amounts of cytoplasm and nuclei are often eccentric with a perinuclear lucent region (Golgi zone). The cells have moderate anisocytosis and anisokaryosis. Some have multiple nuclei, and mitotic figures are common. The thinner lamina propria infiltrates are often accompanied by epithelioid macrophages, lymphocytes and rarely neutrophils. The mucosa is congested and has small scattered foci of hemorrhage. One cystic space is lined by an ulcerated mucosal surface, and the fluid in the lumen contains numerous neutrophils, macrophages and a small number of the neoplastic cells previously described. The bony trabeculae are significantly attenuated.

Morphologic Diagnoses: Bilateral sinonasal plasmacytoma

Comment: Lymphoma has been reported in various cervid species, but we know of only one report of plasmacytoma in a deer. This case was principally interesting because of the clinical presentation. Neoplasms are not commonly encountered in wild deer and the occurrence of one such as this in a deer fawn is very unexpected. In fact, our first assessment of this deer, based on antemortem photographs, was that it likely suffered from a cystic sinusitis. The swollen maxillary sinuses with nodular swelling rostral to the eyes, was an almost identical clinical picture to the antemortem appearance of white-tailed deer with sinus cysts. However, sinus cysts are also more commonly observed, albeit rarely, in adult deer.

When the nasal cavity was sectioned on a band saw it became evident that the nasal sinuses were expanded by solid masses of tissue, and similar tissue thickened the nasal turbinates. The lesions were bilaterally symmetrical, and an inflammatory lesion was considered to be a principal ruleout. However, histopathology revealed the neoplastic nature of the lesions. A diagnosis of plasmacytoma was made based on the distinctive morphology of the cells and a positive reaction for MUM1 by immunohistochemistry.

References:

Clancy, C.S., et al. "Intracerebral malignant plasmacytoma in a mule deer (*Odocoileus hemionus*)." *Journal of comparative pathology* 154.2-3 (2016): 268-271.

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