

Latin Comparative Pathology Group

The Latin Subdivision of the CL Davis Foundation

Diagnostic Exercise

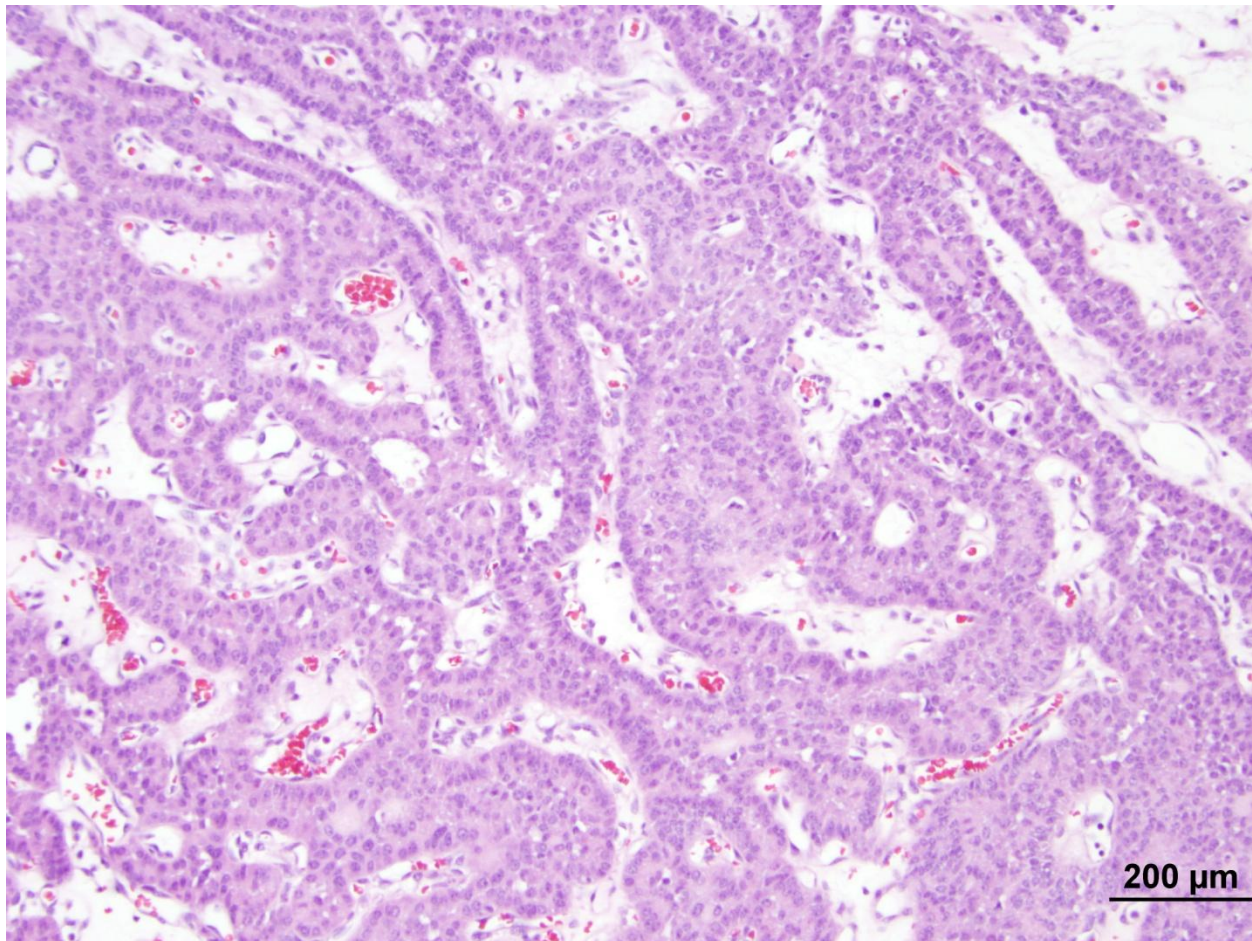
Case #: 18 Month: February Year: 2012

Answer Sheet

Gross Findings:

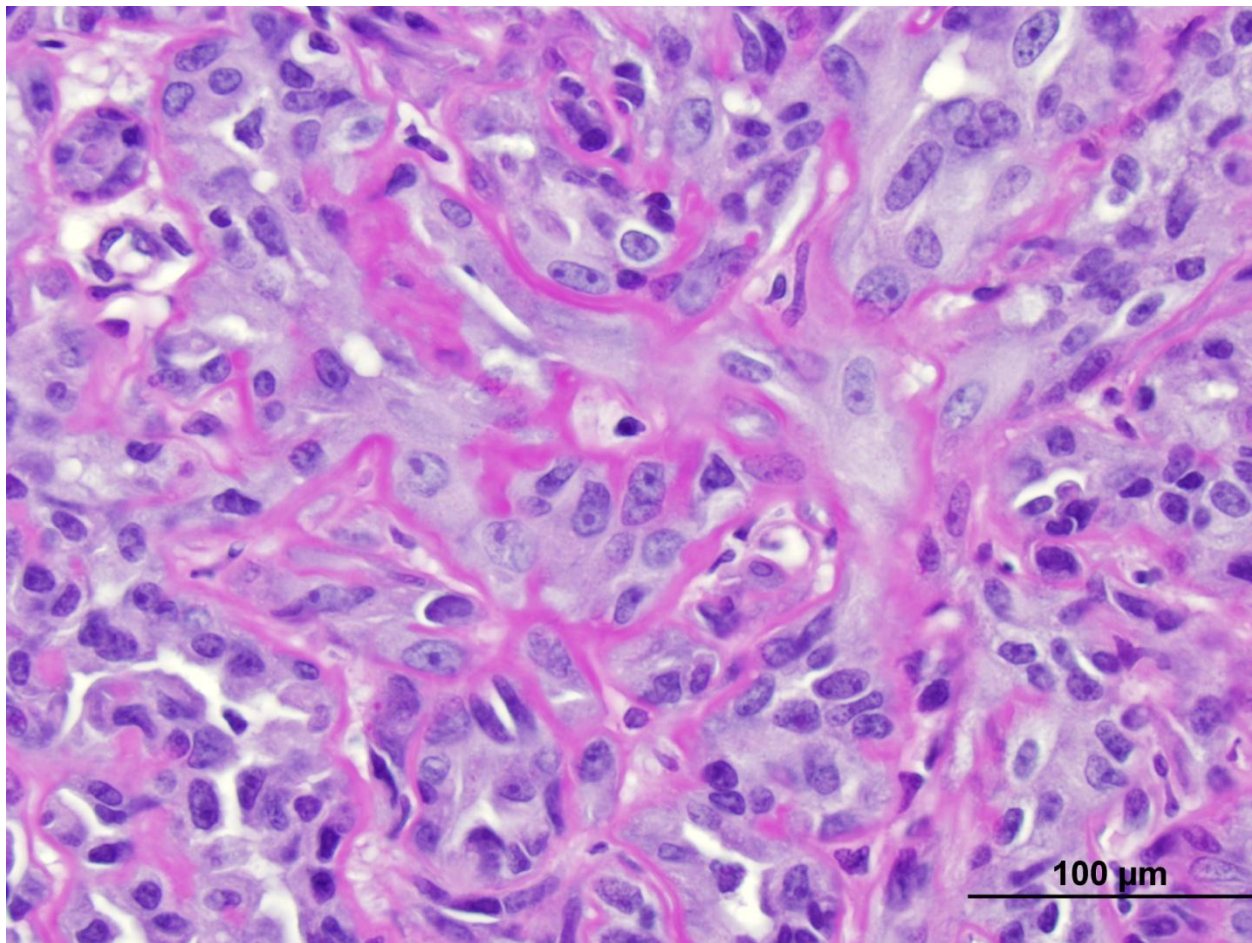
The globe contains a 7 x 4 mm, well delimited, tan mass that focally obliterates the posterior chamber, pushing the inferior iris leaflet anteriorly and dislodging the lens posteriorly.

Microscopic Findings:



The globe contains a well delimited, non-encapsulated epithelial neoplasm within the inferior posterior chamber of the globe examined. The neoplasm displaces the inferior iris leaflet anteriorly and is partially adhered to the Descemet's membrane at the central cornea through a delicate retrocorneal fibrous membrane that is continuous with a pre-iridal fibrovascular membrane. The neoplastic cells are often arranged in cords and packets, and occasionally form tubules, supported by moderate edematous fibrovascular stroma (above). Sporadically, neoplastic cells also palisade around vessels. The cells are polyhedral and have moderate eosinophilic cytoplasm, round to oval hypochromatic nuclei, and 1-2 conspicuous nucleoli. Anisokaryosis is mild to moderate. Mitoses are rare at 0-1 per 10 high power fields.

Periodic-acid Schiff (PAS) reaction demonstrates variably thick branching basal laminae surrounding the neoplastic cell aggregates (below).



Morphologic Diagnosis:

Globe: Non-pigmented, non-invasive iridociliary adenoma

Immunohistochemical Findings:

Immunopositive for vimentin and neuron specific enolase (NSE).

Variable immunopositive for cytokeratins (AE1/AE3): expression of this antigen appears to increase with increasing aggressiveness of the neoplasm.

Discussion:

Iridociliary epithelial neoplasms are the second most common primary intraocular neoplasms in dogs, following intraocular melanocytic neoplasms. They can occasionally also occur in cats, but are rare in other animal species. They arise from the bilayered epithelium that covers the posterior surface of the ciliary body and the iris. Neoplastic cells generally continue to produce a PAS-positive basement membrane, a feature that can be valuable in the determination of the epithelial origin of atypical neoplasms and in the differentiation from metastatic epithelial neoplasms.

Based on the invasiveness, iridociliary epithelial neoplasms can be classified histologically as non-invasive adenomas, uveo-invasive adenomas, irido-ciliary adenocarcinomas, and pleomorphic adenocarcinomas. Malignancy is indicated by more anaplastic cellular morphology and by scleral invasion. Neoplastic cells can be arranged in papillary, tubular, ribbon or cord, and solid patterns. In cats, iridociliary neoplasms are typically composed of solid sheets of non-pigmented cells, with inconspicuous basement membrane and frequent cystic spaces.

Iridociliary epithelial neoplasms are among a number of ocular disease processes that have been reported in association with pre-iridal fibrovascular membrane (PIFVM) formation, likely all with analogous pathophysiologic mechanism such as COX-2 and VEGF secretion. PIFVM can be further associated with intraocular hemorrhage and/or glaucoma. Asteroid hyalosis has also been seen in many cases of canine iridociliary epithelial neoplasms.

Iridociliary epithelial neoplasms may contain melanin pigment, a feature that may cause confusion with uveal melanocytic neoplasms. Another possible differential diagnosis to consider for iridociliary epithelial neoplasms is medulloepithelioma. This is an extremely rare neoplasm that can be benign or malignant and that in dogs arises mainly from the undifferentiated non-pigmented epithelium of the ciliary body. As a neoplasm of neuroectodermal origin, it typically has rosettes but it may otherwise be difficult to differentiate it from the iridociliary epithelial

neoplasms. Metastasis is uncommon for all three neoplasms, but it would still be important to properly diagnose them, especially when excised without enucleation of the globe.

References and Recommended literature:

Dubielzig RR, Ketring KL, McLellan GJ, Albert DM. Uveal epithelial tumors. In: Veterinary ocular pathology: A comparative review. pp. 291-8. New York: Saunders Elsevier. 2010.

Klosterman E, Colitz CM, Chandler HL, Kusewitt DF, Saville WJ, Dubielzig RR. Immunohistochemical properties of ocular adenomas, adenocarcinomas and medulloepitheliomas. *Vet Ophthalmol.* 2006 Nov-Dec;9(6):387-94.

Peiffer RL Jr, Gwin RM, Gelatt KN, Jackson WF, Williams LW, Hill CW. Ciliary body epithelial tumors in four dogs. *J Am Vet Med Assoc.* 1978 Mar 1;172(5):578-83.

Peiffer RL Jr, Wilcock BP, Yin H. The pathogenesis and significance of pre-iridal fibrovascular membrane in domestic animals. *Vet Pathol.* 1990 Jan;27(1):41-5.

Zarfoss MK, Breaux CB, Whiteley HE, Hamor RE, Flaws JA, Labelle P, Dubielzig RR. Canine pre-iridal fibrovascular membranes: morphologic and immunohistochemical investigations. *Vet Ophthalmol.* 2010 Jan;13(1):4-13.

Please send your comments/questions to the whole LCPCG list by hitting "reply to all".

A final document containing this material with answers and a brief discussion will be posted on the C. L. Davis website by the end of the current month (http://www.cldavis.org/lcpg_english.html).