Diagnostic Exercise

From The Davis-Thompson Foundation*

Case #: 114 Month: February Year: 2019

Answer Sheet

Title: Equine recurrent uveitis

Contributors: Tamires Goneli Wichert Teodoro,[1,2,3] DVM; Tatiane Terumi Negrão Watanabe,[2,3] DVM, MS, PhD; Cole Sandow,[2] DVM; Ann Chapman,[2] DVM, MS, DACVIM-LAIM; Colin Mitchell,[2] BVMS, MS, DACVS; Frank Andrews,[2] DVM, MS, DACVIM-LAIM; Renee Carter,[2] DVM, DACVO; Nobuko Wakamatsu,[2,3] DVM, PhD, DACVP, DACPV. [1]Universidade Federal de Lavras, Lavras, MG, Brazil; [2]Louisiana State University, School of Veterinary Medicine, Baton Rouge, LA, USA; [3]Louisiana Animal Disease Diagnostic Laboratory, Baton Rouge, LA, USA.

Microscopic Description:
Right eye: The corneal epithelium was mildly hyperplastic and the stroma was mildly expanded by edema. The iris, ciliary body, filtration angle, and choroid were infiltrated by moderate numbers of plasma cells, lymphocytes, and lesser macrophages with rare Mott cells. The anterior aspect of the iris had multiple small caliber vascular channels (preiridal fibrovascular membrane). The filtration angle was partially collapsed. At the superficial aspect of the ciliary body extending into the periphery of the retina, there was marked deposition of an irregularly thick layer of acellular, amorphous, eosinophilic hyaline material admixed with fibrovascular connective tissue and similar cellular infiltration (Figures 1 and 2). The eosinophilic material was confirmed to be amyloid by Congo red stain exhibiting apple green birefringence (Figure 3). The retina was diffusely atrophic with loss and thinning of the inner nuclear layer and it was multifocally detached with mildly hypertrophic retinal pigment epithelium. The posterior chamber had low numbers of lymphocytes and plasma cells mixed with lightly basophilic amorphous vitreous material. The sclera was multifocally mineralized. The lens had frequent Morgagnian globules characterized by eosinophilic proteinaceous liquefied globules due to degeneration of optic lens fibers throughout with scattered mineralized foci. Steiner stain did not reveal any convincing microorganism.

Laboratory Findings: Samples from the vitreous and aqueous fluid were submitted for polymerase chain reaction testing for *Leptospira* spp. The results were negative.

Condition: Equine recurrent uveitis

Discussion: Equine recurrent uveitis (ERU), also known as equine recurrent ophthalmitis, is the main cause of blindness in horses and mules, characterized by chronic recurrent progressive bouts of anterior uveitis at unpredictable intervals.[3,4] The Appaloosa horse breed has been reported to be predisposed, but no gender predilection has been previously identified.[3,4] The age of the animal at the first bout of uveitis varies; most of the cases begin before 12 years of

age.[3,4] Clinical features are variable depending on the stage of the disease.[4] It is initially unilateral but both eyes can be eventually affected.[6] Systemic clinical signs including fever, depression, and inappetence can also be seen.[6] The pathogenesis is still unknown but some speculations related to *Leptospira interrogans* serovar *pomona* infections[5] or autoimmune disease[4] causing a delayed-type hypersensitivity reaction (type 4 hypersensitivity) have been described.[2] An active intraocular *Leptospira* infection has been reported in some ERU cases.[5]

The microscopic findings of ERU depend on the stage of the disease.[6] In the early phase, there is congestion and neutrophilic infiltration of the anterior uvea. This is rapidly replaced by a lymphocytic and plasmacytic infiltration expanding the iris, ciliary body, and ciliary processes, which can be very mild.[3,5,6] In some cases, rod-shaped intracytoplasmic inclusions in the non-pigmented ciliary epithelium can be also seen.[1,3] Formation of lymphoid follicles can be associated with the chronicity of the disease.[4,6] Edema, fibrin exudate, and leukocyte cellular infiltration can distend the ciliary body stroma secondarily, leading to occlusion of the filtration angle.[6] The ciliary processes may remain expanded by fibrous organization of stromal edema, and by a thick layer of hyaline, acellular, amorphous material covering the inner surface of the non-pigmented ciliary epithelium consistent with amyloid deposition. Amyloid is considered a pathognomonic finding for ERU and can be confirmed by Congo red stain.[3,6] Cataract, corneal wrinkling, synechiae (anterior and posterior), retinal detachment, degeneration, and gliosis of the optic nerve can also be present.[3]

References:

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