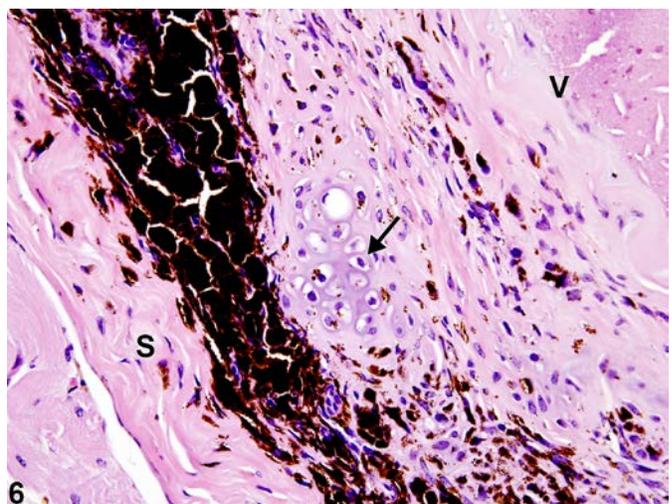
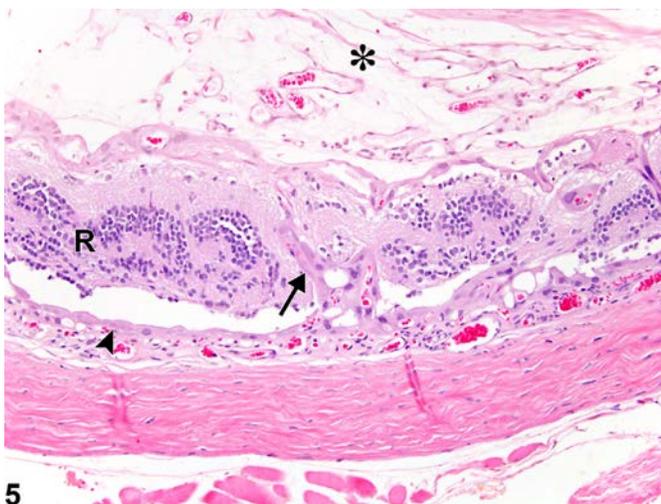
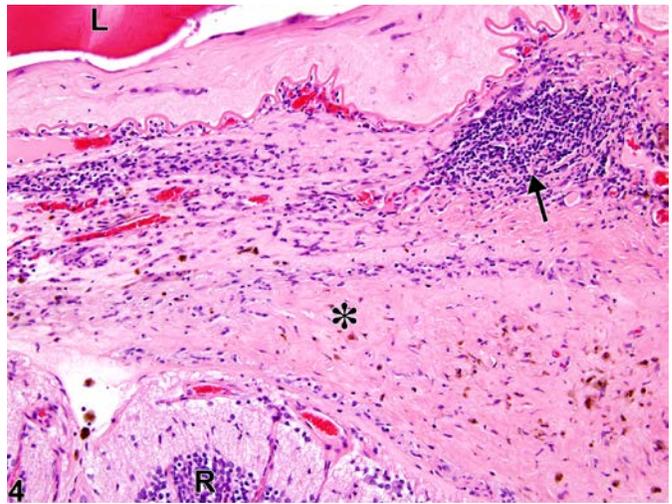
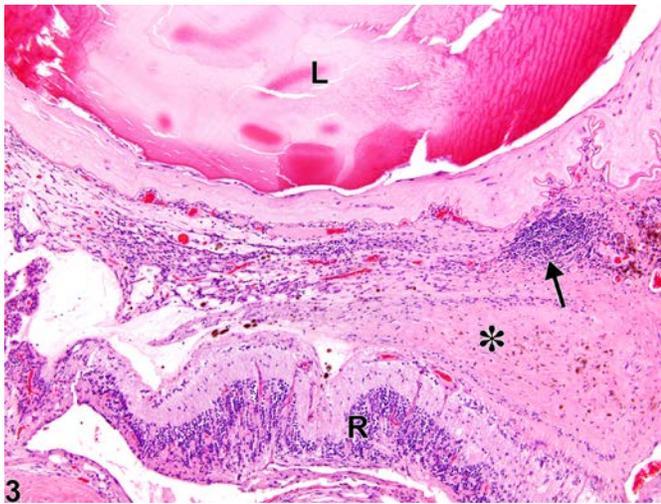
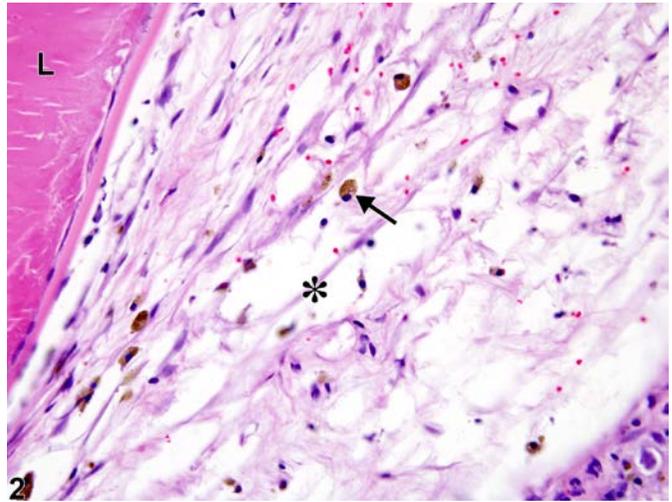
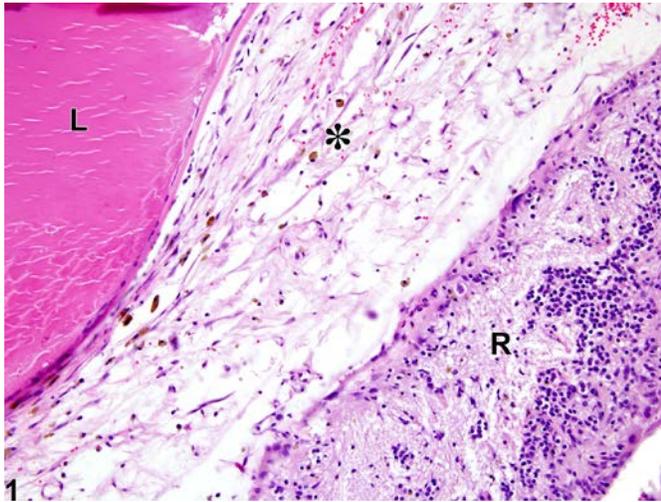


NTP Nonneoplastic Lesion Atlas

Eye, Vitreous – Fibrosis





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Figure Legend: **Figure 1** Eye, Vitreous - Fibrosis in a male F344/N rat from a chronic study. There is loose fibrous connective tissue (asterisk) in the vitreous space between a cataractous lens (L) and a detached, degenerate retina (R). **Figure 2** Eye, Vitreous - Fibrosis in a male F344/N rat from a chronic study (higher magnification of Figure 1). There is loose fibrous connective tissue (asterisk) with space scattered pigmented macrophages (arrow) in the vitreous; L = cataractous lens. **Figure 3** Eye, Vitreous - Fibrosis in a female F344/N rat from a chronic study. There is advanced fibrosis in the vitreous space characterized by dense fibrous connective tissue (asterisk) with chronic inflammation (arrow); L = cataractous lens, R = detached, degenerate retina. **Figure 4** Eye, Vitreous - Fibrosis in a female F344/N rat from a chronic study (higher magnification of Figure 3). The advanced fibrosis is characterized by dense fibrous connective tissue (asterisk) in the vitreous space with chronic inflammation (arrow); L = cataractous lens, R = detached degenerate retina. **Figure 5** Eye, Vitreous - Fibrosis in a female F344/N rat from a chronic study. There is fibrosis (asterisk) and infiltration by migrating reactive epithelial cells (arrow) from the retinal pigment epithelium (arrowhead) in the vitreous space in the eye; R = detached and degenerate retina. **Figure 6** Eye, Vitreous - Fibrosis in a male B6C3F1 mouse from a chronic study. Area of dense, mature fibrous connective tissue in the vitreous (V) and focal cartilaginous metaplasia (arrow); S = sclera.

Comment: Various insults to the vitreous (penetrating injury, inflammation, etc.) can result in reactive vascularization and organization with proliferation of vitreal fibrous connective tissue (vitreal scar or fibrous membrane formation). In early fibrosis, loose fibrous connective tissue fills the vitreous space (Figure 1 and Figure 2) between the lens and retina. More advanced fibrosis (Figure 3 and Figure 4) is characterized by dense sheets of mature fibrous tissue that replace the normal vitreous. Vitreous fibrosis is often associated with chronic inflammation and/or pigmented macrophage accumulations (Figure 1, Figure 2, Figure 3, and Figure 4).

Reactive retinal pigment epithelium (RPE) cells may migrate transretinally into the vitreous (Figure 5) and spreading along the inner surface of the retina. Such migrant RPE cells can undergo fibrous metaplasia (epithelial-to-mesenchymal transition) into fibroblast-like cells and participate in the formation of abnormal vitreal fibrous tissue, including fibrous membranes on the surface of the retina and other posterior ocular structures. Other cells that participate in development of vitreal fibrosis include activated resident vitreal hyalocytes, retinal Müller cells and astrocytes, immigrant



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macrophages, and scleral fibroblasts. Cartilaginous or osseous metaplasia can occasionally form in late-stage vitreal fibrosis (Figure 6).

Recommendation: Vitreous fibrosis should be diagnosed and assigned a severity grade. If pertinent to the characterization of a treatment-related effect, the morphology and distribution of the fibrous tissue (e.g., epiretinal membranes) should be described in the narrative. The pathologist should exercise judgment in deciding whether to diagnose only vitreal inflammation or vitreal fibrosis in a given animal, or whether to diagnose both. Features such as RPE cell migration and cartilaginous and osseous metaplasia should not be diagnosed separately, though they can be described in the pathology narrative.

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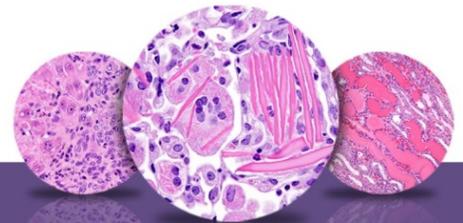
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