NTP Nonneoplastic Lesion Atlas

Eye, Cornea – Vacuolation, Cytoplasmic

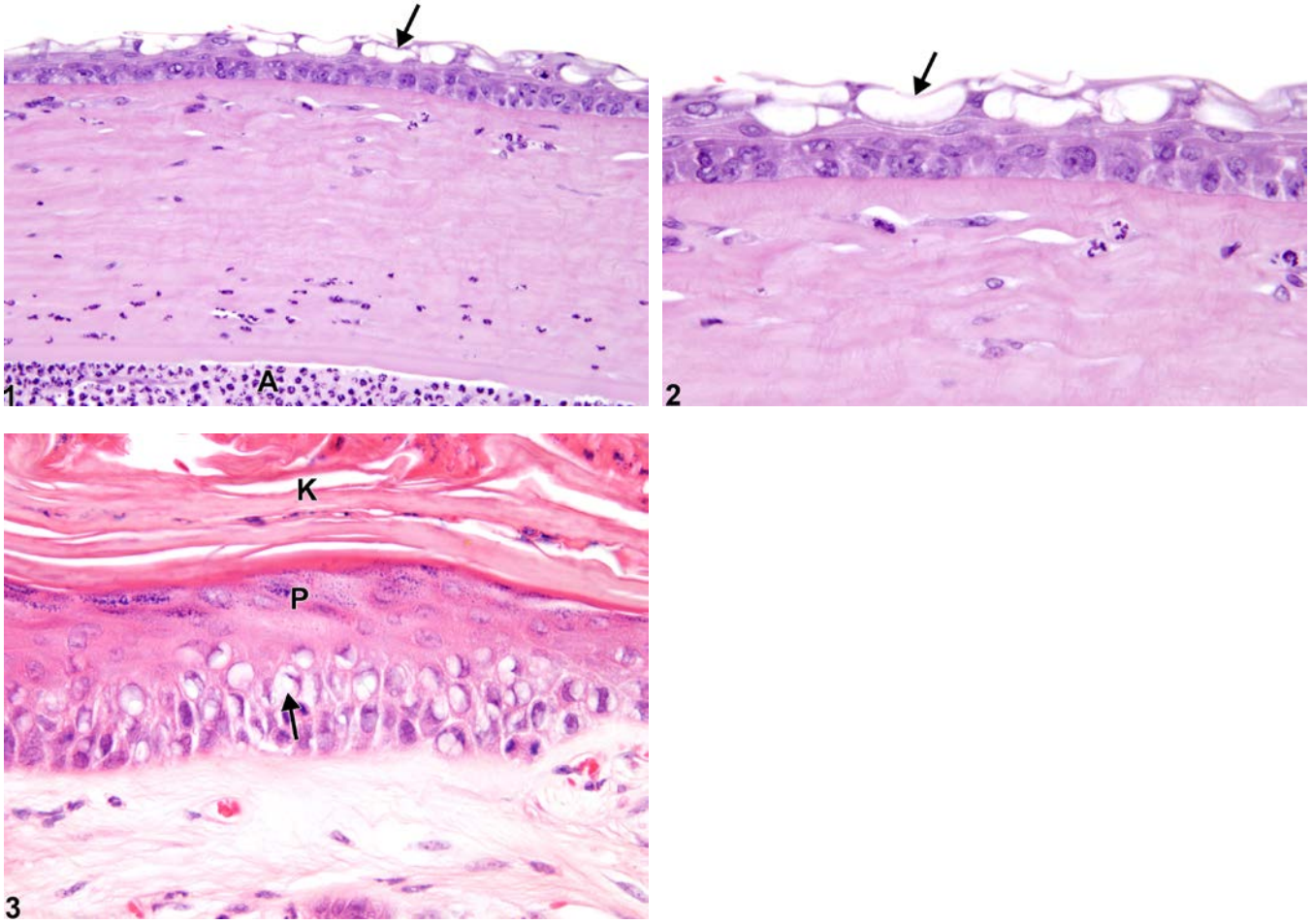
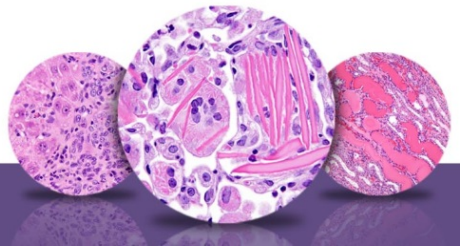


Figure Legend: **Figure 1** Eye, Cornea - Vacuolation, Cytoplasmic in a male F344/N rat from a chronic study. There are clear discrete vacuoles (arrow) in the corneal epithelial cells and inflammatory cells in the anterior chamber (A). **Figure 2** Eye, Cornea - Vacuolation, Cytoplasmic in a male F344/N rat from a chronic study (higher magnification of Figure 1). There are clear discrete vacuoles in the superficial epithelial cells (arrow). **Figure 3** Eye, Cornea - Vacuolation, Cytoplasmic in a male B6C3F1 mouse from a chronic study. There are clear vacuolesis present in the basal epithelial cells (arrow); there is also corneal epithelial hyperplasia (P) and hyperkeratosis (K).



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Comment: Corneal epithelial vacuoles (Figure 1, Figure 2, and Figure 3) are characterized as discrete, variably sized, generally clear, single to multiple, round to oval cytoplasmic spaces. These can occur in the corneal epithelial, endothelial, or stromal cells (keratocytes). Epithelial vacuoles can occur in specific cell layers (e.g., basal, suprabasal). Vacuoles may enlarge and coalesce to form intraepithelial vesicles or stromal lacunae. Vacuoles in corneal cells can result from various causes, including systemic or topically applied toxins; can appear as features of inherited storage diseases, such as mucopolysaccharidoses; or can be secondary to corneal desiccation or inflammation. True vacuoles must be distinguished from the artifactual clear zones (often perinuclear) that often occur in corneal cells. The vacuolation may be accompanied by inflammatory cells in the underlying stroma (Figure 1, Figure 2, and Figure 3) or the anterior chamber (Figure 1), and corneal epithelial hyperplasia and hyperkeratosis (Figure 3).

Recommendation: If occurring as a primary toxic or heritable effect, corneal cytoplasmic vacuolation should be diagnosed and assigned a severity grade. An appropriate site modifier (e.g., epithelium, endothelium, stroma) should be included in the diagnosis to indicate the location of the affected cells. When occurring as a feature or sequela to another pathologic process (e.g., inflammation), corneal cytoplasmic vacuolation should not be diagnosed separately unless warranted by severity, but should be described in the pathology narrative.

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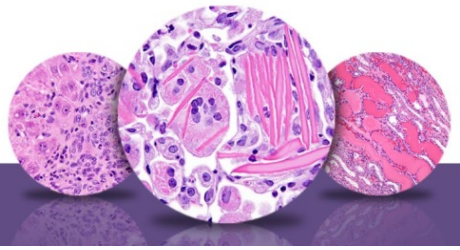

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