



# NTP Nonneoplastic Lesion Atlas

## Stomach, Glandular Stomach - Edema

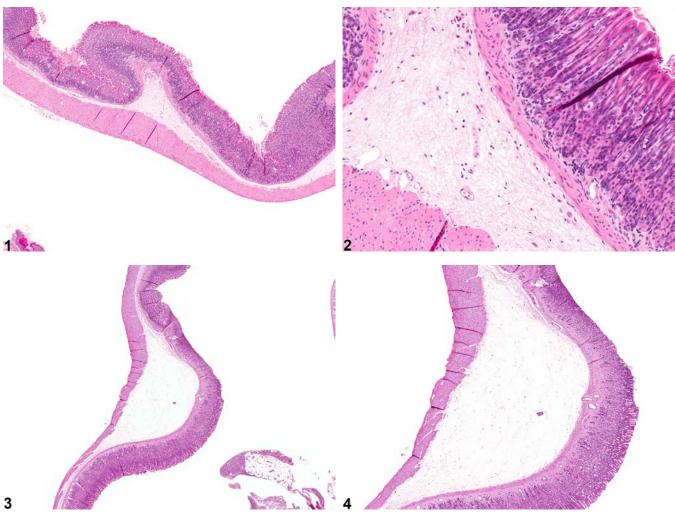
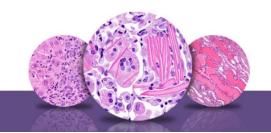


Figure Legend: Figure 1 Stomach, Glandular stomach - Edema in a female B6C3F1 mouse from a chronic study. The submucosa is expanded by fluid. Figure 2 Stomach, Glandular stomach - Edema in a female B6C3F1 mouse from a chronic study (higher magnification of Figure 1). The submucosa is expanded by fluid. Figure 3 Stomach, Glandular stomach - Edema in a female B6C3F1 mouse from a chronic study (higher magnification of Figure 1). The submucosa is expanded by fluid. Figure 4 Stomach, Glandular stomach - Edema in a female B6C3F1 mouse from a chronic study (higher magnification of Figure 1). The submucosa is expanded by fluid.

**Comment:** Edema fluid is often lost in processing and appears as clear spaces in tissues, although edema fluid with a higher protein content will be more eosinophilic in sections. Edema is the result of alteration in any of the factors that regulate normal fluid distribution among the plasma, interstitium, and





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cells, such as increased vascular permeability, increased intravascular hydrostatic pressure, decreased intravascular osmotic pressure, and decreased lymphatic drainage. Therefore, any chemical resulting in the above changes can cause edema. Edema is often an early component of inflammation.

**Recommendation:** Whenever present as a prominent finding of its own, edema should be diagnosed and graded. Severity grade depends on the extent of separation of the tissues by the edema fluid and overall amount of tissue affected. Minor edema associated with inflammation is not diagnosed separately.

#### References:

Hirose M, Hakoi K, Takahashi S, Hoshiya T, Akagi K, Lin C, Saito K, Kaneko H, Shirai T. 1999. Sequential morphological and biological changes in the glandular stomach induced by oral administration of catechol to male F344 rats. Toxicol Pathol 27:448-455. Abstract: http://www.ncbi.nlm.nih.gov/pubmed/10485826

Mosier, DA. 2007. Vascular disorders and thrombosis. In: Pathologic Basis of Veterinary Disease, 4th ed (McGavin MD, Zachary JF, eds). Mosby, St Louis, MO, 63-99.

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