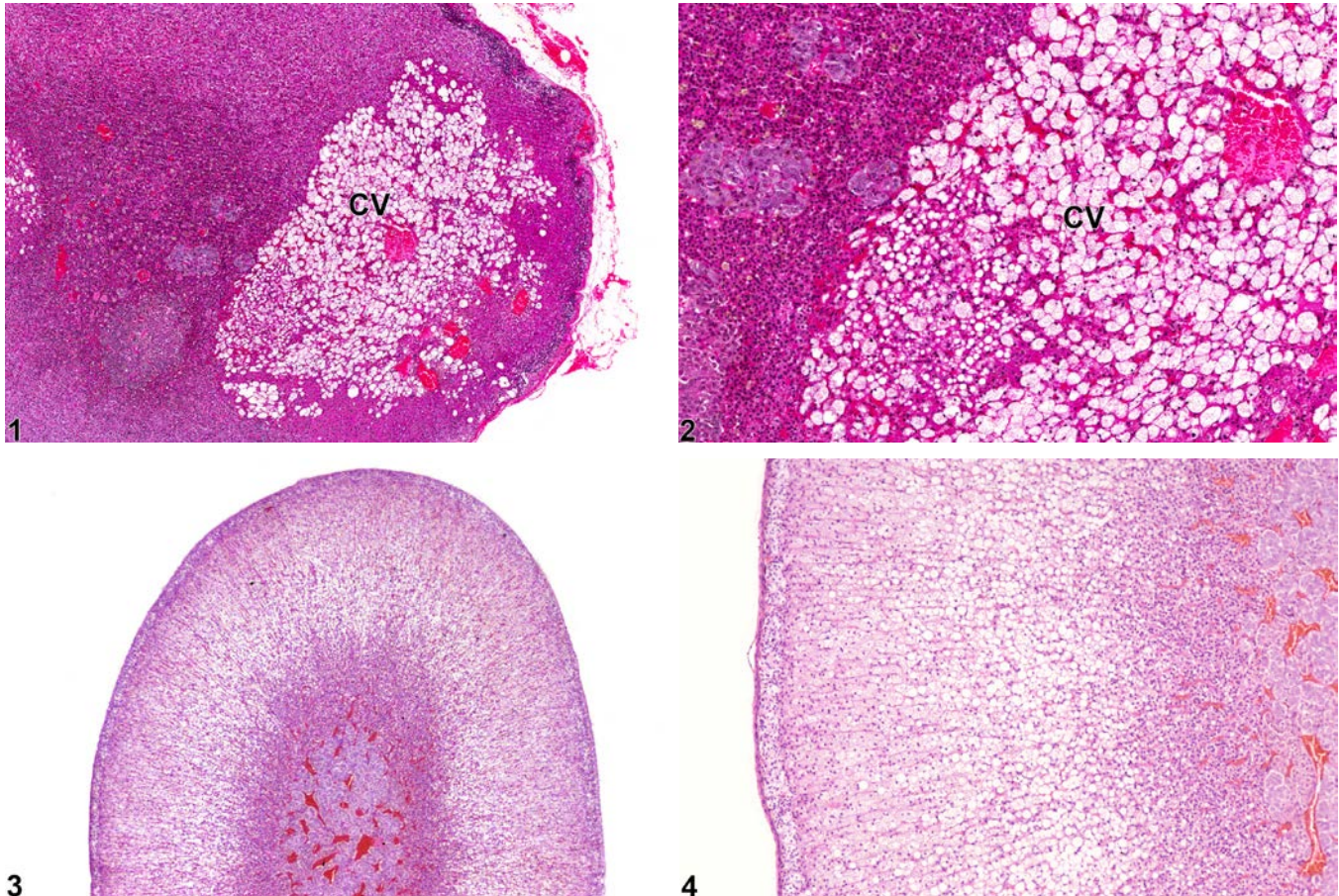




# NTP Nonneoplastic Lesion Atlas

## *Adrenal Gland, Cortex – Vacuolization, Cytoplasmic*



**Figure Legend:** **Figure 1** Adrenal gland, Cortex - Vacuolization, Cytoplasmic in a female F344/N rat from a chronic study. A large focus of vacuolated cells (CV) in the zona fasciculata causes little if any compression of the adjacent cortex. **Figure 2** Adrenal gland, Cortex - Vacuolization, Cytoplasmic in a female F344/N rat from a chronic study (higher magnification of Figure 1). A large focus of cells (CV) in the zona fasciculata with variably sized vacuoles. **Figure 3** Adrenal gland, Cortex - Vacuolization, Cytoplasmic in a male F344/N rat from a subchronic study. Diffuse cytoplasmic vacuolization is present predominantly in the zonae fasciculata and glomerulosa. **Figure 4** Adrenal gland, Cortex - Vacuolization, Cytoplasmic in a male F344/N rat from a subchronic study (higher magnification of Figure 3). The cells of the zonae fasciculata and glomerulosa contain variably sized vacuoles.



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**Comment:** Adrenal cortical vacuolization in rats and mice is characterized by the accumulation of usually clear vacuoles within cortical cells, mainly in the zona fasciculata, although the zonae reticularis and glomerulosa are also often affected. The vacuolization can be focal (Figure 1 and Figure 2) or diffuse (Figure 3 and Figure 4). Even large focal lesions generally cause little to no compression. The vacuoles can range from a single to a few large vacuoles to multiple smaller ones. In many cases, the vacuoles have been shown to represent accumulations of various lipids or cholesterol.

Cortical vacuolization can occur as a spontaneous, age-related change (especially in rats); secondary to stress from various causes; and from administration of many exogenous drugs and toxins, especially those that interfere with normal steroidogenesis in the adrenal cortex and/or perturb the hypothalamic-pituitary-adrenal hormonal axis (including normal secretion and metabolism of adrenocorticotropic hormone [ACTH]). Cortical vacuolization can also result from experimental administration of excess ACTH or corticosterone.

**Recommendation:** Adrenal cortical cytoplasmic vacuolization should be diagnosed and assigned a severity grade. An appropriate distribution modifier (i.e., focal or diffuse) should also be included in the diagnosis. If localized to a particular zone of the cortex, this should be noted in the pathology narrative. In cases of adrenal cortical hyperplasia or hypertrophy with some constituent vacuolated cells, the vacuolization should not be diagnosed separately, though it should be described in the narrative as a feature of the hyperplasia or hypertrophy. If vacuolization is seen in both adrenal glands, the modifier “bilateral” should be added to the diagnosis (lesions are assumed to be unilateral unless otherwise indicated).

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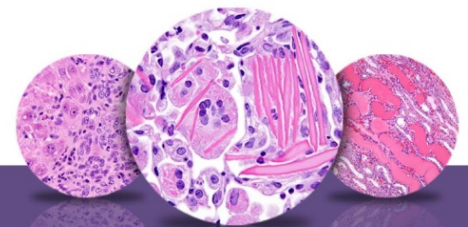
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