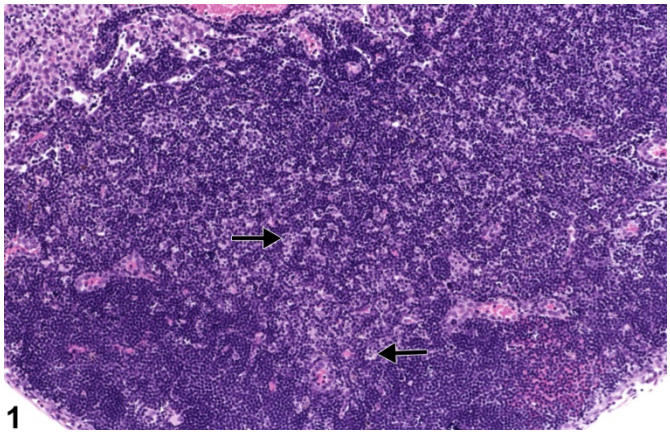
Lymph Node – Apoptosis, Lymphocyte



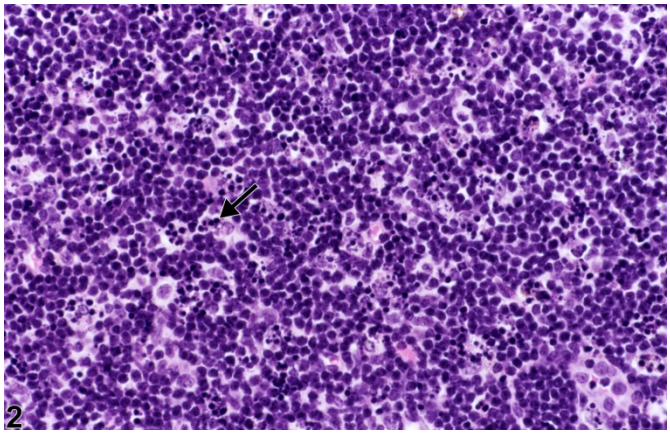
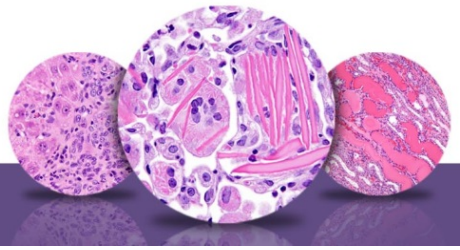


Figure Legend: Figure 1 Lymph node - Apoptosis, Lymphocyte in a female B6C3F1/N mouse from a subchronic study. Scattered throughout the paracortex are numerous tingible-body macrophages (arrows). **Figure 2** Lymph node - Apoptosis, Lymphocyte in a female B6C3F1/N mouse from a subchronic study (higher magnification of Figure 1). Tingible-body macrophages contain fragments of apoptotic lymphocytes (apoptotic bodies) (arrow).

Comment: Lymphocyte apoptosis is characterized by cell shrinkage, nuclear pyknosis, and fragmentation of lymphocytes into membrane-bound (apoptotic) bodies that are subsequently phagocytized by macrophages (tingible-body macrophages) (Figure 1 and Figure 2, arrowheads). This type of cell death normally occurs in B cells within the germinal centers of secondary follicles, where it is an important homeostatic mechanism. Figure 1 and Figure 2 demonstrate the lesion in T cells in the paracortex. Lymphocyte apoptosis may be normal in lymph nodes, increased in nodes of immunodeficient mice, or induced by various injurious stimuli. Some injurious stimuli induce lymphocyte apoptosis at low doses, whereas at higher doses the stimulus leads to necrosis. Examples of such stimuli include heat, irradiation, hypoxia, and cytotoxic cancer drugs (e.g., cyclophosphamide). Dexamethasone can also incite lymphocyte apoptosis; however, the thymus and spleen are more sensitive to this effect than is the lymph node. If severe enough, lymphocyte apoptosis may lead to lymph node atrophy. Historically, lymphocytes apoptosis has been called “lymphocyte necrosis,” but the correct terminology for this lesion is “lymphocyte apoptosis.” Single-cell necrosis of lymphocytes has not previously been described in the lymph node. Lymphocyte apoptosis must be differentiated from necrosis, although both can occur together. Necrosis generally occurs in groups of cells and is



characterized by cell swelling, condensation, fragmentation and dissolution of the nucleus, cell lysis, and accumulation of eosinophilic cytoplasmic and karyorrhectic nuclear debris. Inflammation generally accompanies necrosis because cell lysis releases cellular contents, including proinflammatory mediators, into the interstitial space.

Recommendation: Lymphocyte apoptosis in the lymph node can be normal. If increased compared with concurrent controls, lymphocyte apoptosis should be diagnosed and assigned a severity grade.

References:

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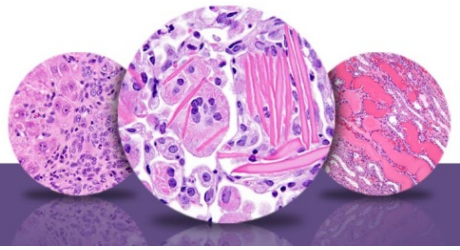

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