Skeletal Muscle – Edema

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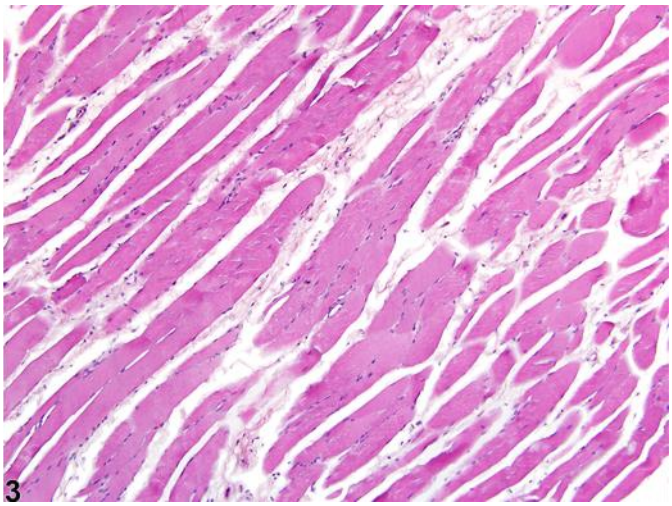
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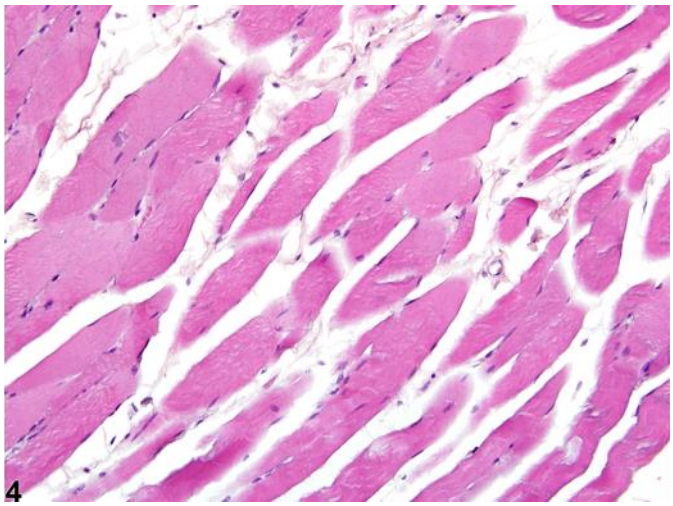
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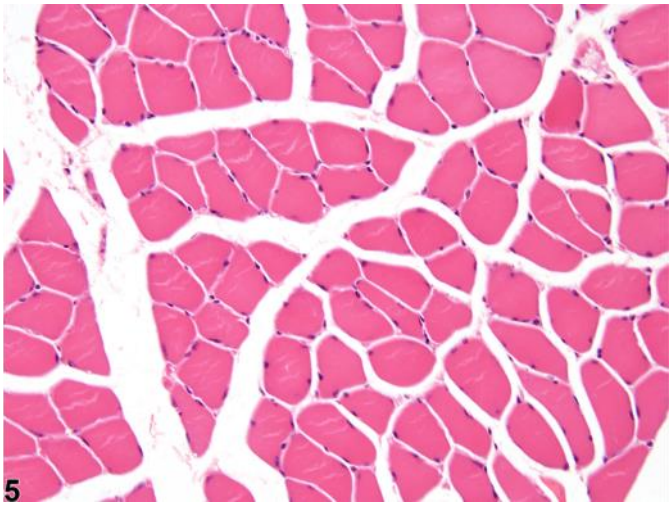
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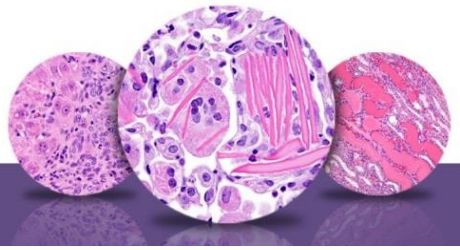

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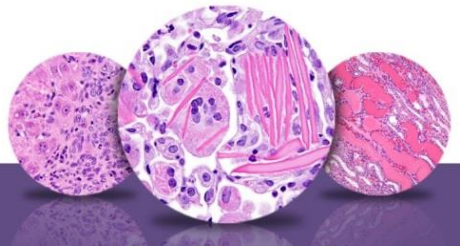
Figure Legend: **Figure 1** Skeletal muscle - Edema in a male F344/N rat from a chronic study. Muscle fibers and muscle bundles are separated by expanded interstitial spaces filled with pale pink material. **Figure 2** Skeletal muscle - Edema in a male F344/N rat from a chronic study (higher magnification of Figure 1). There are separated muscle fibers and muscle bundles due to an accumulation of pale pink interstitial material. **Figure 3** Skeletal muscle - Edema in a male F344/N rat from a chronic study. A longitudinal section of skeletal muscle shows expansion of the interstitial spaces due to an accumulation of poorly stained edema fluid. **Figure 4** Skeletal muscle - Edema in a male F344/N rat from a chronic study (higher magnification of Figure 3). Interstitial spaces are expanded by poorly stained edema fluid. **Figure 5** Skeletal muscle - Normal in a male B6C3F1/N mouse from a subchronic study. Expanded interstitial space caused by fixation and/or sectioning artifact.

Comment: Edema in skeletal muscle, as in other tissues, is histologically identified by the expansion of interstitial tissue by amorphous to fibrillar, clear to pale eosinophilic material that separates and surrounds individual myofibers (Figure 1, Figure 2, Figure 3, and Figure 4). It is important to distinguish interstitial spaces that are expanded due to edema from those created in normal tissue as a result of fixation or sectioning artifact (Figure 5). Separation as a result of artifact lacks the presence of pale eosinophilic fibrillar material between muscle fibers and bundles.

While edema can occur as a primary lesion (Figure 1, Figure 2, Figure 3, and Figure 4), it most commonly occurs secondary to necrosis and inflammation; regions of hemorrhage are often accompanied by edema. Intramuscular edema can be seen in association with autoimmune conditions, such as polymyositis and dermatomyositis; mild injuries; infectious myositis; subacute denervation; compartment syndrome; and rhabdomyolysis; it can also be seen as a transient, physiologic finding during and briefly following muscle exercise.

Recommendation: When intramuscular edema is the sole or primary lesion, it should be diagnosed and graded. In instances where intramuscular edema is a secondary lesion (e.g., to inflammation), it should not be recorded separately unless warranted by severity but should be described within the pathology narrative.



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