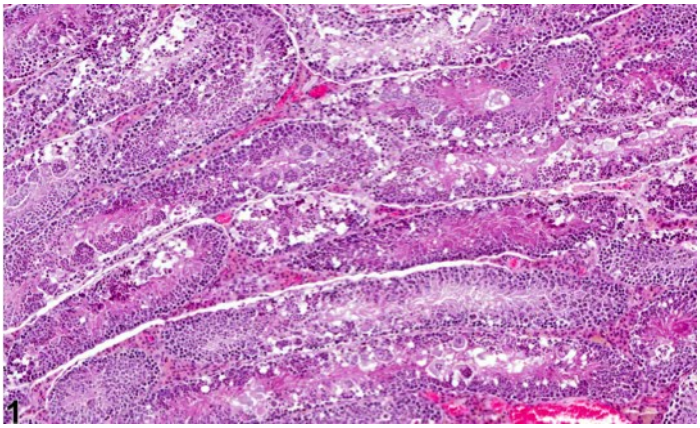
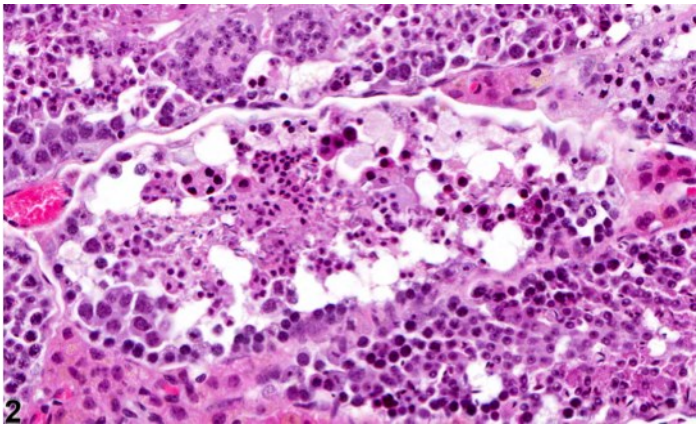
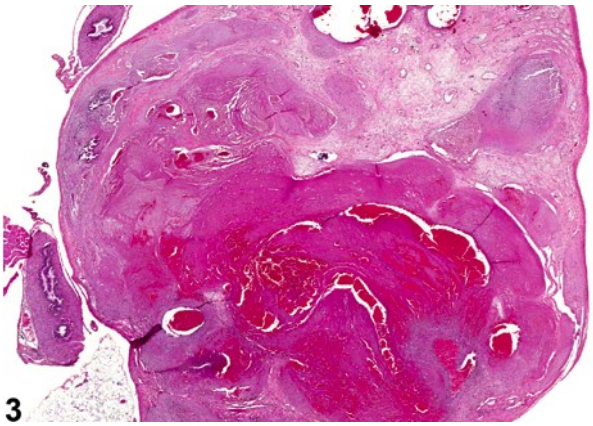
Testis, Seminiferous tubule – Necrosis







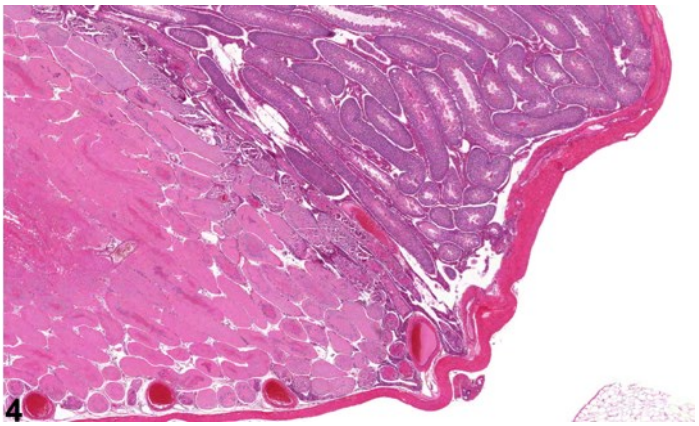
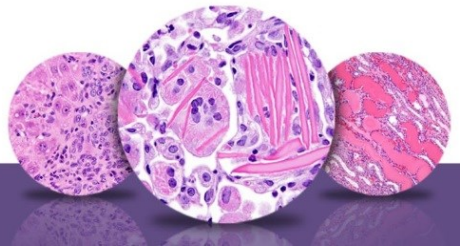


Figure Legend: Figure 1 Testis, Seminiferous tubule - Necrosis in a male Swiss Webster mouse from a chronic study. Vacuoles are present in affected seminiferous tubules. **Figure 2** Testis, Seminiferous tubule - Necrosis in a male Swiss Webster mouse from a chronic study. This higher magnification of Figure 1 shows that both germ cells and Sertoli cells are undergoing necrosis. **Figure 3** Testis, Seminiferous tubule - Necrosis in a male B6C3F1 mouse from a chronic study. There is complete effacement of the testis associated with infarction. **Figure 4** Testis, Seminiferous tubule - Necrosis. There is discrete necrosis of seminiferous tubules in the frontal lower part of the testis. (Photograph courtesy of Dr. Diane Creasy.)

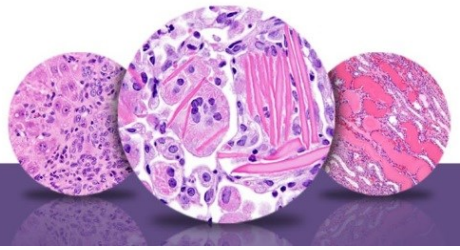
Comment: Seminiferous tubule necrosis (Figure 1 and Figure 2) is characterized by seminiferous tubules in which germ cells and Sertoli cells are undergoing cell death. The cell death in Figure 1 and Figure 2 consists of hypereosinophilic disorganized cells showing pyknosis and associated



vacuolization or larger areas of pale eosinophilic regions of protein coagulation secondary to ischemia or infarction (Figure 3 and Figure 4). The most common cause of seminiferous tubule necrosis is ischemic injury, which may result from incidental torsion of the testis or may be chemically related. In addition, some vasoactive agents, such as serotonin, histamine, and epinephrine, have also been shown to produce seminiferous tubule necrosis. A salient feature of this form of cell death is that it involves both germinal epithelium and Sertoli cells. In contrast, cell death involving only germinal epithelium typically occurs through the process of apoptosis.

Chemically induced testicular necrosis has been described in rodents administered cadmium, which is an endothelial toxicant in the testis of rodents. Necrosis can also be caused by agents causing vascular thrombosis in the testis. A characteristically focal necrosis at the frontal lower part of the rat testis (Figure 4) has been described following a single administration of human chorionic gonadotropin to rats. The necrosis was considered to be due to local ischemia caused by prostaglandin release from Leydig cells. Testicular necrosis is not reversible, due to loss of Sertoli cells and tubular structure, and the affected area is replaced by scar tissue. Extensive necrosis of the testis can also be caused by accidental intraperitoneal injection directly into the testis (which can occur because the rodent is able to retract its testes into the abdominal cavity).

Recommendation: Seminiferous tubule necrosis should be diagnosed and graded and should be discussed in the pathology narrative if the incidence and/or severity appear to be related to chemical administration. If both testes are affected, the diagnosis should be qualified as bilateral and given a severity grade based on the more severely affected testis. If vascular thrombi are evident as a precipitating cause, that fact should be mentioned in the pathology narrative. Associated lesions, such as inflammation, should be diagnosed separately if warranted by severity.



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