Epididymis – Sperm Granuloma

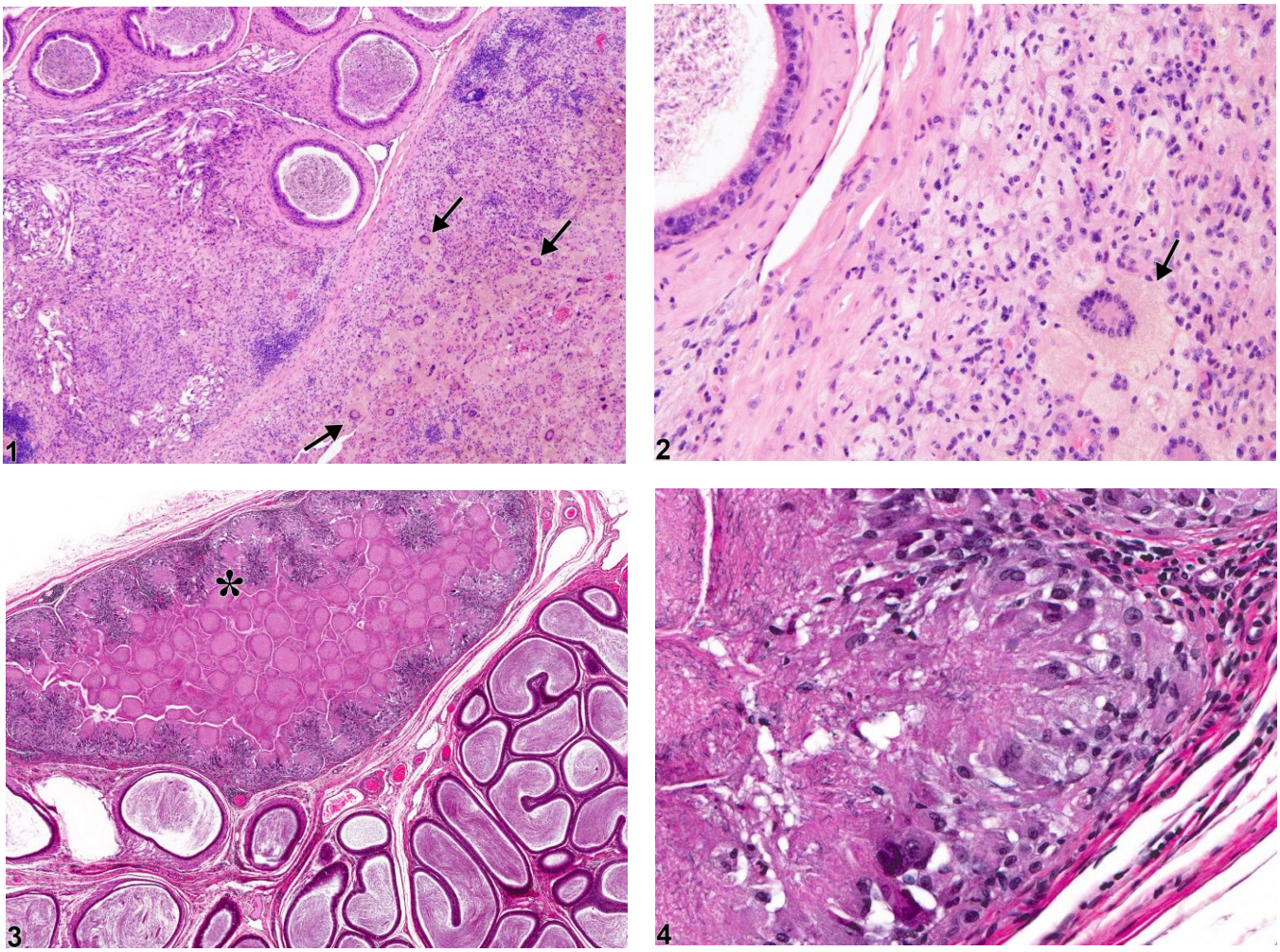
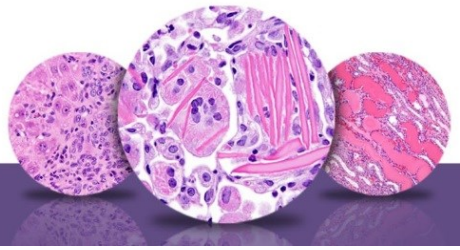


Figure Legend: Figure 1 Epididymis - Sperm Granuloma. Giant cells are present in the sperm granuloma (arrows) in a male B6C3F1 mouse from a chronic study. **Figure 2** Epididymis - Sperm Granuloma. Higher magnification of Figure 1 showing the granulomatous inflammation and presence of giant cells (arrow) in a male B6C3F1 mouse from a chronic study. **Figure 3** Epididymis - Sperm Granuloma. A discrete sperm granuloma is present (asterisk) in a male F344/N rat from a subchronic study. **Figure 4** Epididymis - Sperm Granuloma. Higher magnification of Figure 3 showing the granulomatous reaction in the lumen of the affected duct in a male F344/N rat from a subchronic study.

Comment: Sperm granulomas occur when sperm is released into the interstitium through a rupture in the epithelial lining or when inflammatory cells gain access to the sperm within the ductular lumen. If there is rupture into the interstitium, the epididymal lining may repair itself and maintain sperm



continuity through the epididymal duct. Sperm granulomas are most commonly seen in the cauda epididymis but can occur throughout the epididymis, as well as the efferent ducts. If they occur in the efferent ducts and obstruct the outflow of sperm and fluid from the testis, they will result in secondary tubular dilation and/or atrophy in the associated testis due to the accumulated backpressure upstream. The lesion is characterized by a central accumulation of sperm surrounded by a granulomatous foreign body inflammatory response, which generally contains numerous multinucleated giant cells (arrows, Figure 1 and Figure 2) (Also see Epididymis - Inflammation). Sperm granulomas occur as an incidental background finding in any age of rodent but can also be chemically induced.

Recommendation: Sperm granulomas should be diagnosed and graded and should be discussed in the pathology narrative if the incidence and/or severity appears to be related to chemical administration. Bilateral involvement should be recorded when present, and a modifier can be used to record location within the epididymis if appropriate. Associated lesions in the epididymides should not be diagnosed separately unless warranted by severity. Associated lesions in the testes may be diagnosed separately and their association to the sperm granuloma noted in the narrative.

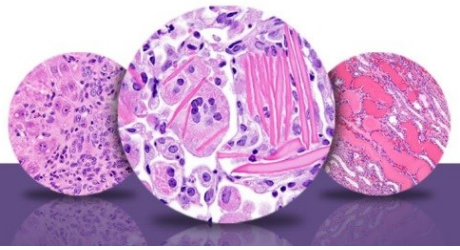
References:

Boorman GA, Chapin RE, Mitsumori K. 1990. Testis and epididymis. In: Pathology of the Fischer Rat: Reference and Atlas (Boorman GA, Eustis SL, Elwell MR, Montgomery CA, MacKenzie WF, eds). Academic Press, San Diego, 405-418.
Abstract: http://www.ncbi.nlm.nih.gov/nlmcatalog/9002563

Creasy D, Bube A, de Rijk E, Kandori H, Kuwahara M, Masson R, Nolte T, Reams R, Regan K, Rehm S, Rogerson P, Whitney K. 2012. Proliferative and nonproliferative lesions of the rat and mouse male reproductive system. Toxicol Pathol 40:40S-121S.
Abstract: http://www.ncbi.nlm.nih.gov/pubmed/22949412

Kempinas WD, Suarez JD, Roberts NL, Strader L, Ferrell J, Goldman JM, Klinefelter GR. 1998. Rat epididymal sperm quantity, quality, and transit time after guanethidine-induced sympathectomy. Biol Reprod 59:890-896.
Abstract: http://www.ncbi.nlm.nih.gov/pubmed/9746740

Klinefelter GR. 2002. Actions of toxicants on the structure and function of the epididymis. In: The Epididymis: From Molecules to Clinical (Robaire B, Hinton BT, eds). New York, Kluwer/Plenum, 353-370.
Abstract: http://www.springer.com/medicine/urology/book/978-0-306-46684-7



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References:

La DK, Johnson CA, Creasy DM, Hess RA, Baxter E, Pereira M, Snook SS. 2011. Efferent duct toxicity with secondary testicular changes in rats following administration of a novel leukotriene A4 hydrolase inhibitor. Toxicol Pathol 40:705-714.
Abstract: http://tpx.sagepub.com/content/40/5/705.short

McGinn JS, Sim I, Bennet NK, McDonald SW. 2000. Observations on multiple sperm granulomas in the rat epididymis following vasectomy. Clin Anat 13:185-194.
Abstract: http://www.ncbi.nlm.nih.gov/pubmed/10797625

Sawamoto O, Yamate J, Kuwamura M, Kotani T, Kurisu K. 2003. Development of sperm granulomas in the epididymides of L-cysteine-treated rats. Toxicol Pathol 31:281-289.
Abstract: http://www.ncbi.nlm.nih.gov/pubmed/12746115

Tani Y, Sills RC, Foster MD, Chan PC, Peddada SD, Nyska A. 2005. Epididymal sperm granuloma induced by chronic administration of 2-methylimidazole in B6C3F1 mice. Toxicol Pathol 33:313-319.
Abstract: http://www.ncbi.nlm.nih.gov/pubmed/15814360

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