Testicular degeneration due to suspected theobromine toxicosis in two rescued coatis (Nasua spp.)

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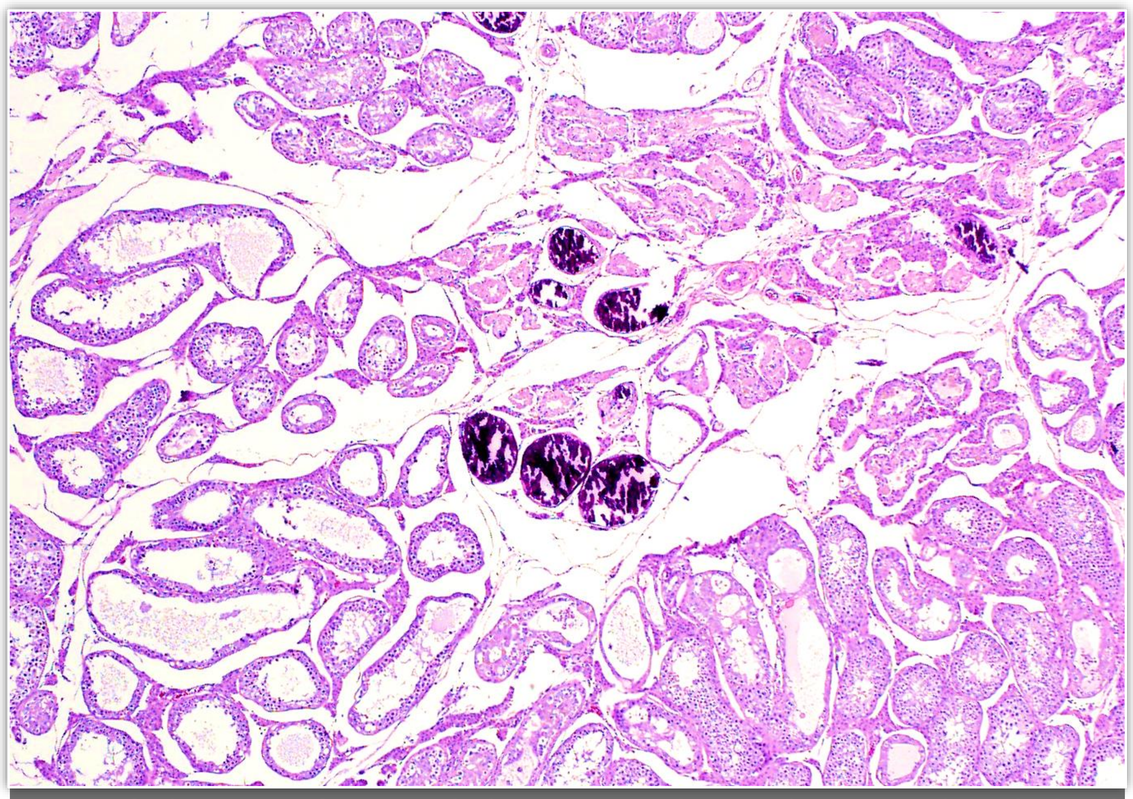
Introduction

- → **Theobromine and caffeine are the most common methylxanthines present in high concentrations in cocoa and/or caffeine.**
- → **Theobromine absorption and excretion is slow in animals, therefore, the half-life is longer in most animals.**
- → **In humans, there is increasing evidence that theobromine ingestion is involved in changes in endogenous physiological adrenocortical secretion and the development of testicular pathological changes, including cancer.**
- → **Here we report testicular degeneration in two male Coatis (Nasua spp.) with a history of a theobromine-rich diet.**

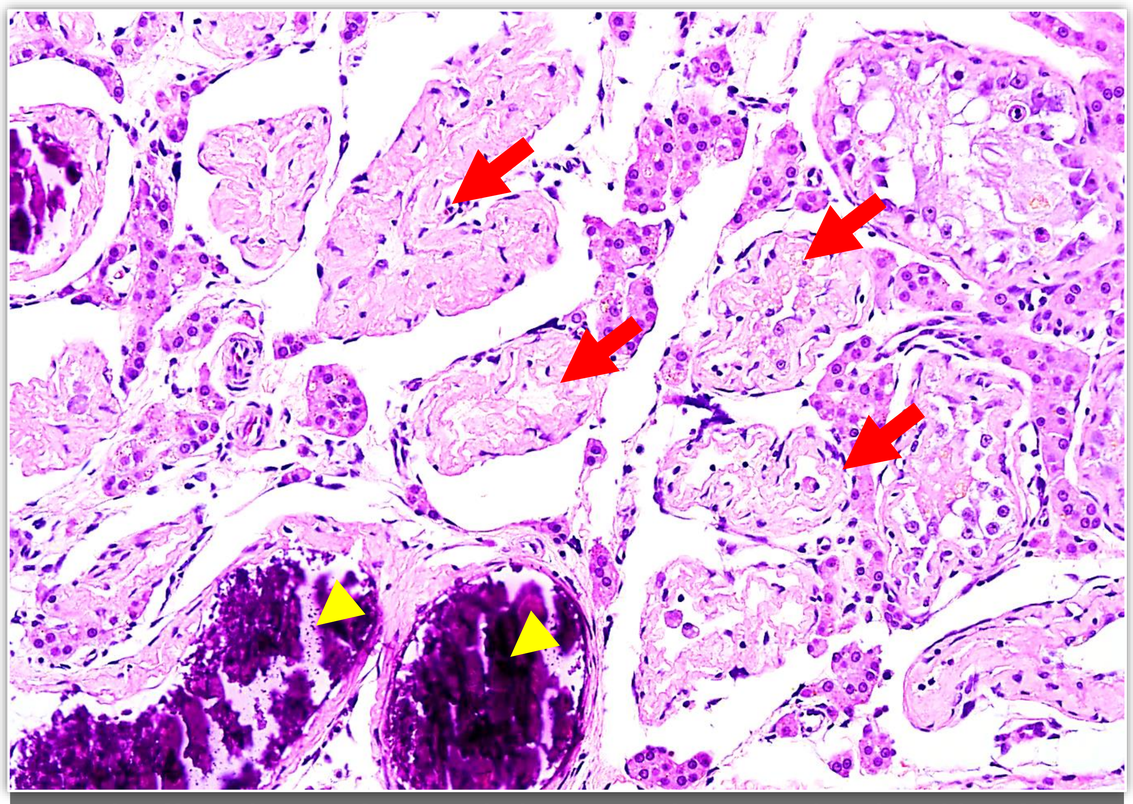
Materials and Methods

- → **Two rescued, 4-year-old Coatis (Nasua spp.) used for entertainment in a circus were neutered in a private veterinary practice in Texas, USA.**
- → **The animals presented with friable testicles with scattered firm foci. Both had a history of being indiscriminately fed with food containing theobromine (e.g., cupcakes, chocolate).**
- → **The testicles of both animals were submitted to the Zoo and Exotic Animal Pathology Service (ZEAPS) at the University of Georgia, USA, for histopathological analysis.**
- → **The samples were histologically processed and stained with HE, Masson's trichome, and for the expression of Melan-A (IHC).0**

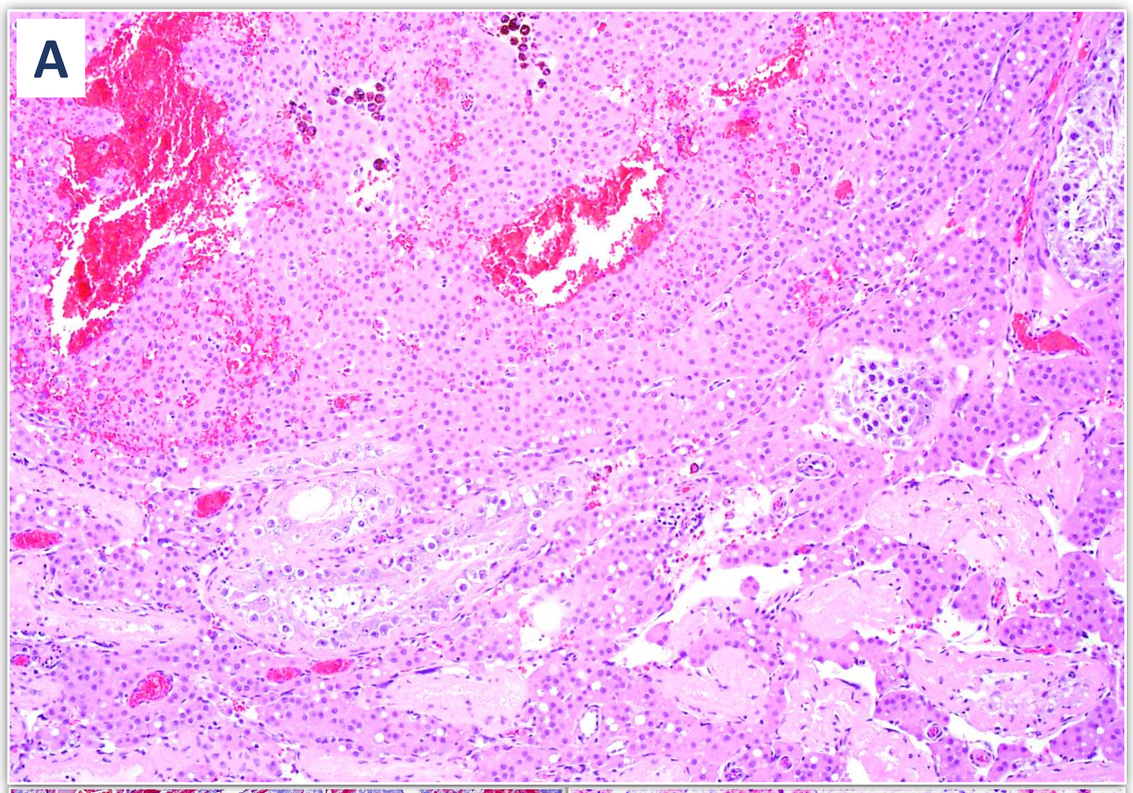
Results



Most of the seminiferous tubules presented partial or complete lack of spermatogenesis, along with germ cell degeneration, disorganization, and depletion.



Severely affected seminiferous tubules were sclerotic and replaced by fibrosis (arrow) and mineral (arrowhead).



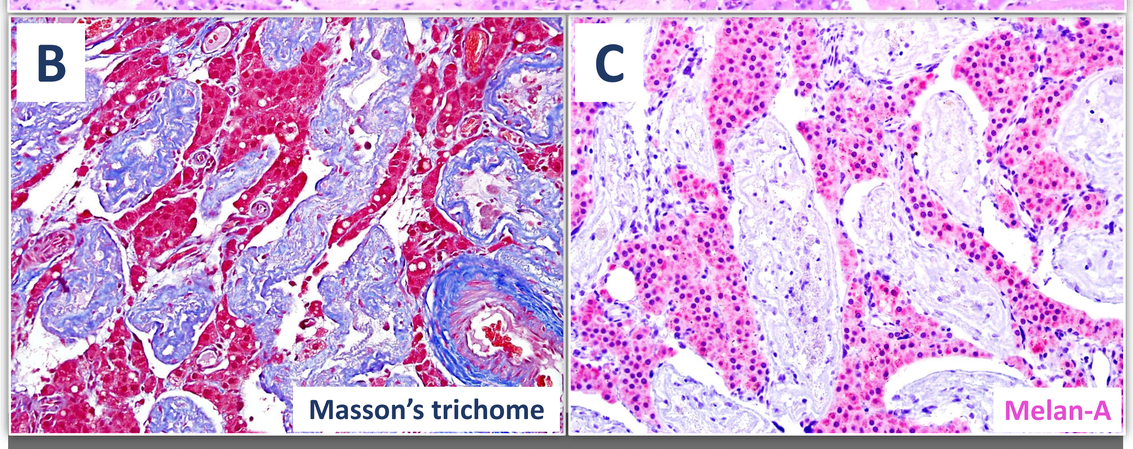
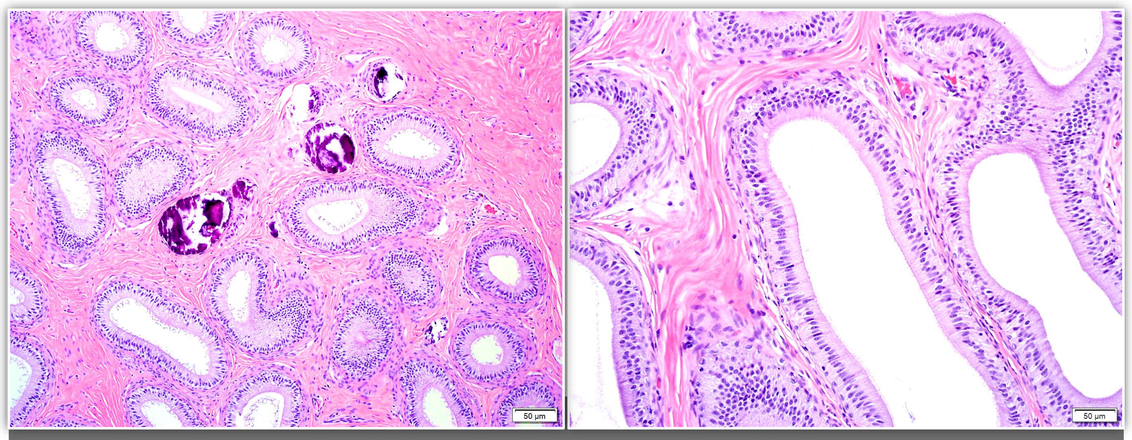


Figure A. Highlights solid sheets of interstitial cells. Figure B. Exemplifies the seminiferous tubule fibrosis. Figure C. Highlights interstitial cells with Melan-A immunochemical stain.



Approximately 90% of epididymal tubules were devoid of spermatozoa.

Conclusions

Considering the clinical history, the testicular histopathological alterations are comparable to theobromine-induced lesions reported in other species.

References:

1. Funabashi, Hitoshi, et al. "COLLABORATIVE WORK TO EVALUATE TOXICITY ON MALE REPRODUCTIVE ORGANS BY REPEATED DOSE STUDIES IN RATS: 22) EFFECTS OF 2-AND 4-WEEK ADMINISTRATION OF THEOBROMINE ON THE TESTIS." The Journal of Toxicological Sciences 25.SpecialIssue (2000): 211-221.
2. Eteng, Mbeh U., et al. "Theobromine induced seminiferous tubular lesion with elevated serum testosterone levels in male Wistar rats." Biokemistri 17.2 (2005): 123-128.