TESTIS AND EPIDIDYMIS ULTRASONOGRAPHY AND FINE-NEEDLE BIOPSY IN THE RHINOCEROS FOR TUMOR AND FERTILITY DIAGNOSIS

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Abstract

Ultrasound and electroejaculation have become accepted methods for the assessment of the reproductive status of male rhinoceroses. The activity status of the accessory sex glands, the amount of testicular fibrosis as sign of ageing and the semen quality in the ejaculate are characteristics, which were regarded as sufficient to allow an accurate evaluation of the current breeding status of a bull (HERMES et al., 2005) . However, a recent report on testicular neoplasia gave a first indication of the occurrence of reproductive pathology in male rhinoceroses and possible necessity of advanced diagnostic procedures to evaluate reproductive status and health (PORTAS et al., 2005). In this study routine reproductive assessments of 6 male rhinoceroses of four different species (black n=1, white n=3, Indian n=1, Sumatran n=1) produced findings, aspermatic ejaculates (n =3), non-nomgenicity of the testicluar parenchyma (n=3) and epididymal cysts (n=1), which required further diagnostic procedures. Ultrasound-guided biopsy of the testes was performed in 4 males as part of the routine reproductive assessment using a 18/17 G needle-trocar biopsy system (Somatex® Medical Technologies GmbH, Berlin, Germany) to further assess the activity of the spermatogenic tissue or to determine the histopathological character of a neoplastic lesion. The testis biopsy samples (1-3 per testis) was immersion-fixed in cold Bouin's solution and embedded in paraffin and stained with the standard Haematoxylin & Eosin (**HE**) **Staining** Protocols . In the aspermatic white rhinoceros the seminiferous tubules showed no pattern of active spermatogenesis. The spermatogenic activity appeared arrested at the level of elongating spermatids. The aspermatic Sumatran rhinoceros with epididymal cysts showed a similar arrested spermatogenesis. While this primary infertility in the white rhino seemed related to very poor body condition the aetiology in the Sumatran rhino remains speculative, specifically, with the high libido this male had expressed. In the aspermatic Indian rhinoceros all stadiums of spermatogenesis were present in the tubuli semeniferi. Despite this active spermatogenesis the stage of spermiation, the presence of adluminal sperm as last step in spermatogenesis was absent. This seemingly reduced spermatogenesis in combination with low testosterone concentrations suggested a temporary infertility. Histopathology combined with the irregular ultrasound appearance of a neoplasia in the black rhinoceros characterised this lesion as malignant, resulting in the decision to hemi castrate this male. However, due to the small sample size and a consequent lack of tumour tissue connection to the basal membrane a specification of the tumour type from a fine-needle biopsy sample proved difficult. It is concluded that ultrasound of testis and epididymis and testicular biopsy in rhinoceros have the potential to specifically diagnose transient or permanent reductions in

fertility and provide options for surgical intervention in case of testicular neoplasia at an early stage of detection.

References

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