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Cover: Stripe-necked Mongoose *Urva vitticollis* in poster colours, adapted from photograph by Ashni Dhawale, by Pooja Ramdas Patil.



A case report on chronic renal disease in a captive wild Leopard *Panthera pardus* (Mammalia: Carnivora)

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Leopards are found all throughout Africa and Asia, but due to isolated and declining populations, they have disappeared from a significant portion of their original range (Stein et al. 2020). The IUCN Red List of Threatened Species (2020) has categorised leopards as ‘Vulnerable’. An ideal age distribution for a species population would include a large proportion of young animals and a progressively declining proportion of adults with increasing age. For a number of our captive felid species, the age distribution pattern is now biased toward older individuals. In older captive felids, chronic renal illness is a major cause of death and morbidity (Wack 2008). Age is one of the major contributing factors for glomerular and interstitial alterations in kidneys (Junginger et al. 2015). The kidneys in geriatric canines are often found to exhibit contracted, pale, and indented appearance (Kumar et al. 2020). Captive Leopards are now outliving their free ranging counterparts due to advancing husbandry and veterinary care (Longley 2011).

In the present investigation, on the same day of detection of collapse a Leopard carcass was sent for necropsy examination to the Department of Veterinary Pathology, DGCN COVAS, CSKHPKV, Palampur. A detailed

postmortem examination was conducted (Image 1) and representative tissue samples of approximately 0.5 cm thickness were collected in 10% neutral buffered formalin (NBF) for histopathological examination. The fixed tissue sections were dehydrated in ascending grades of alcohol, cleared in benzene, and impregnated in molten paraffin. The tissue sections containing paraffin blocks were sectioned with microtome to 2–3 micron thickness and were stained with Haematoxylin and Eosin (H&E) stain and Masson’s trichrome stain as per the standard protocol (Luna 1968) and were microphotographed (Olympus BX40).

The necropsy examination of the animal showed enlargement of both kidneys, which showed irregular or rough surface along with completely adhered and tense capsule which was hard to peel (Image 2). The lungs were voluminous with oedematous fluid accumulation (Image 3). The small intestine showed the presence of blood mixed with catarrhal exudate (Image 4). The histological examination of the renal tissue exhibited severely congested vasculature with multiple areas of tubular necrosis along with hyaline and cellular degenerations. The glomerular tufts were occupied

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Image 1. Leopard presented for necropsy examination. © Rakesh Kumar.



Image 2. Rough surface of kidney with tightly adhered renal capsule. © Rakesh Kumar.



Image 3. Tracheal lumen with mucus mixed oedematous contents. © Rakesh Kumar.



Image 4. Intestinal lumen showing mucus mixed hemorrhagic contents. © Rakesh Kumar.

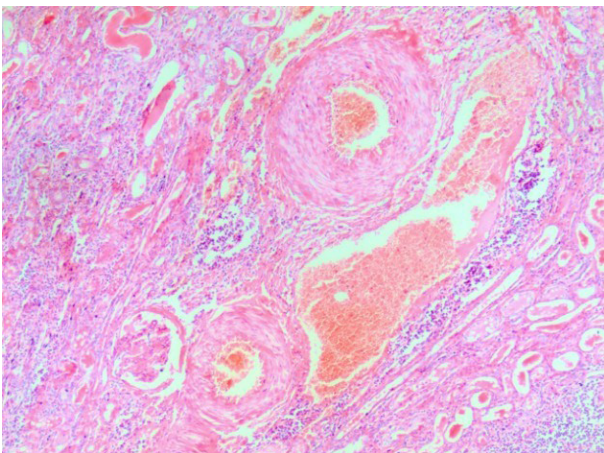


Image 5. Renal tissue showing congested blood vessels and eosinophilic material in tubular lumen along with peri-vascular infiltration of lymphocytes. H&E x 100. © R.K Asrani.

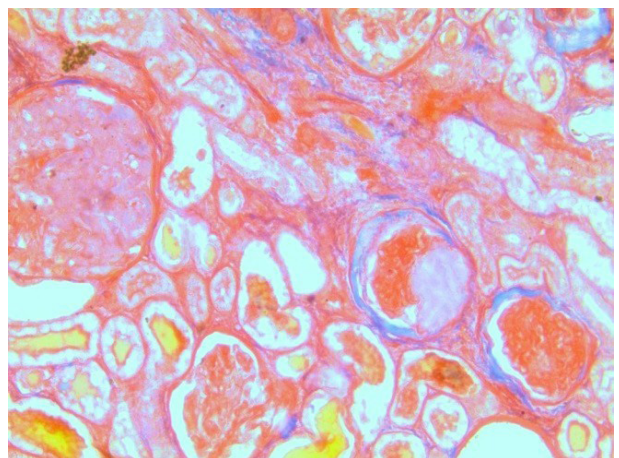


Image 6. Peri-glomerular fibrosis, glomerulosclerosis and glomerular atrophy in kidney section. MSTx200. © R.K Asrani.

by collagenous fibrous tissue deposition with resulted atrophy and infiltrating inflammatory cells especially lymphocytes (Image 5). The fibrous tissue in kidneys observed on histopathological examination was further confirmed by Masson's trichrome staining which showed widespread peri-glomerular, inter-tubular fibrosis along with glomerulosclerosis (Image 6) and similar results are supported by a book compiled by Maxie & Newman (2007). Among geriatric dogs and felines, age-related systemic hypertension can contribute to the progression of CKD (Bidani et al. 2012). It has been speculated that environmental stressors like dehydration, psychological stress etc. coupled with aging produce pronounced detrimental impacts on renal perfusion. Furthermore, evidence suggests that inflammatory bowel disease or gastroenteritis in felines and human beings would be expected to cause mild to moderate renal injury due to inflammatory changes or drug therapy (Mitchell et al. 2018)

Based on gross and microscopic changes in kidneys, the leopard in the present investigation is speculated to have died of chronic lymphocytic tubulo-interstitial nephritis with associated lesions in intestine and lungs. The life expectancy of captive felids is longer compared to their free ranging counterparts owing to advances in management and treatment aspects. Animals in captivity are thus more prone to develop age-related degenerative diseases.

References

- Bidani, A.K., K.A. Griffin & M. Epstein (2012). Hypertension and chronic kidney disease progression: why the suboptimal outcomes? *The American Journal of Medicine* 125(11): 1057–1062. <https://doi.org/10.1016/j.amjmed.2012.04.008>
- Junginger, J., F. Hansmann, V. Herder, A. Lehmbecker, M. Peters, M. Beyerbach, P. Wohlsein & W. Baumgärtner (2015). Pathology in captive wild felids at German zoological gardens. *PLoS One* 10(6): e0130573. <https://doi.org/10.1371/journal.pone.0130573>
- Kumar, R., A. Kumar, R. Masand, A. Bisht, A. Singla & R.K. Asrani (2020). Clinico-pathological characterization of chronic renal diseases in geriatric dogs. *Indian Journal of Veterinary Pathology* 44(2): 123–128.
- Longley, L. (2011). A review of ageing studies in captive felids. *International Zoo Yearbook* 45(1): 91–98.
- Luna, G. (1968). *Manual of Histological Staining Method of the Armed Forces Institute of Pathology*, 3rd Edition. New York, McGraw-Hill Book Company, xii + 258 pp.
- Maxie, M.G. & S.J. Newman (2007). Urinary system, pp. 425–522. In: Maxie, G. (ed.). *Jubb, Kennedy, and Palmer's Pathology of Domestic Animals*. 5th Edition, Vol. 2. Elsevier, Philadelphia, PA, 782 pp.
- Mitchell, E.P., L. Prozesky & J. Lawrence (2018). A new perspective on the pathogenesis of chronic renal disease in captive cheetahs (*Acinonyx jubatus*). *PLoS One* 13(3): e194114. <https://doi.org/10.1371/journal.pone.0194114>
- Stein, A.B., V. Athreya, P. Gerngross, G. Balme, P. Henschel, U. Karanth, D. Miquelle, S. Rostro-Garcia, J.F. Kamler, A. Laguardia, I. Khorozyan & A. Ghoddousi (2020). *Panthera pardus* (amended version of 2019 assessment). The IUCN Red List of Threatened Species 2020: e.T15954A163991139. <https://doi.org/10.2305/IUCN.UK.2020-1.RLTS.T15954A163991139.en>
- Wack, R.F. (2008). Treatment of chronic renal failure in nondomestic felids, pp. 462–465. In: Fowler, M.E. & R.E. Miller (eds.). *Zoo and Wild Animal Medicine*. WB Saunders, 495 pp.



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