

Chronic Kidney Disease in Animals: A Study on Kidney and Liver Pathology of Cattle from CKDu-Prevalent North Central Province of Sri Lanka

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Chronic Kidney Disease of unknown aetiology (CKDu) is a major health issue in Sri Lanka. Several studies have identified renal histopathologies in humans with CKDu. To the authors' knowledge, there are no reports of pathology of animal tissues in CKDu-prevalent areas globally or locally to date. This study investigates whether similar lesions prevail in animals and establishes the gross and histopathological morphology of renal and hepatic tissues of cattle from CKDu-endemic North Central Province (NCP). Forty (n=40) kidney and liver samples of Jersey cattle from NCP were collected mainly from abattoirs. Control samples (n=40) were collected from Jersey cattle of non-CKDu-endemic Kandy area. Forty percent (40%) of kidney samples showed multifocal petechial haemorrhages as the sole gross pathological lesion. However, gross liver lesions were not observed. The most common histopathological lesion in the kidney was tubular degeneration; observed in all test samples (100%). Other conspicuous lesions were lymphocytic infiltration (80%), interstitial fibrosis (55%), and glomerulosclerosis (50%). Common hepatic lesions were lymphocytic infiltration (70%) along with centrilobular necrosis (70%). These lesions were moderate to severe in severity and multifocal to diffuse in distribution. Only 15% of control samples showed mild focal lymphocytic aggregates as the sole lesion in both renal and hepatic tissues. Current literature on human CKDu reports similar tubulointerstitial morphology in renal tissues; however hepatic lesions have not been investigated. The renal and hepatic lesions were comparatively extensive in test samples than in controls. Renal lesions of cattle showed high similarity with those of humans. Liver lesions could not be compared since hepatic histopathology of CKDu patients is still unknown. Our findings are probably indicative of the effects of environmental risk factors common to humans and animals in this area. Since age and clinical history of these animals are unknown, further studies should investigate the exact causes of these lesions.

Keywords: Chronic kidney disease, Cattle, Histopathology, North Central Province