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A Retrospective Study of Chronic Kidney Disease of uncertain etiology (CKDu) Progression in Sri Lanka: A Renal Biopsy Analysis and Association with Risk Factors

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Objectives : The present study was carried out to investigate the renal biopsy evidence of CKDu patients and to determine the associations of their behavioral patterns and risk factors with disease progression.
Methods : This study analyzed 2,766 kidney biopsy samples from the University of Peradeniya's pathology database, focusing on tubulointerstitial disease indicative of CKDu. From these, 320 cases with histological confirmation of CKDu were selected, excluding primary glomerular diseases. Biopsies were assessed using hematoxylin and eosin staining, immunofluorescence, and a standardized scoring system for disease severity. Among them, 75 patients were interviewed to collect demographic and exposure data. Kidney function decline was assessed using a >30% sustained drop in eGFR. Participants' blood pressure (Hg/mm), serum creatinine values (mg/dL) from the day of the biopsy up to the day of the interview were traced from their clinical records. Informed consent was obtained from each patient.
Results : Histopathological analysis revealed characteristic patterns of tubular atrophy (89.37%), interstitial fibrosis (75.62%), and glomerular sclerosis (85.31%), with variations across disease stages. Notably, serum creatinine and estimated glomerular filtration rate (eGFR) did not consistently reflect the underlying kidney pathology. Two distinct histological patterns emerged: one showing high activity with lower chronicity, and another displaying high chronicity with lower activity. The study cohort was predominantly male farmers (90.66%), with 83.7% reporting agrochemical exposure. Despite comprehensive analysis, no definitive histological characteristics or risk factors could reliably predict disease progression. Participants demonstrated significant shifts in water consumption

patterns, transitioning from well water to filtered and tap water sources, reflecting increased risk awareness. The relatively low mean eGFR decline (-0.0052 ± 0.83 mL/min/year) observed might be attributed to interventions such as safe water provision.

Conclusions : These findings highlight the complex nature of CKDu and suggest that current diagnostic markers may inadequately capture the disease's pathological progression, underscoring the need for more sophisticated diagnostic approaches.

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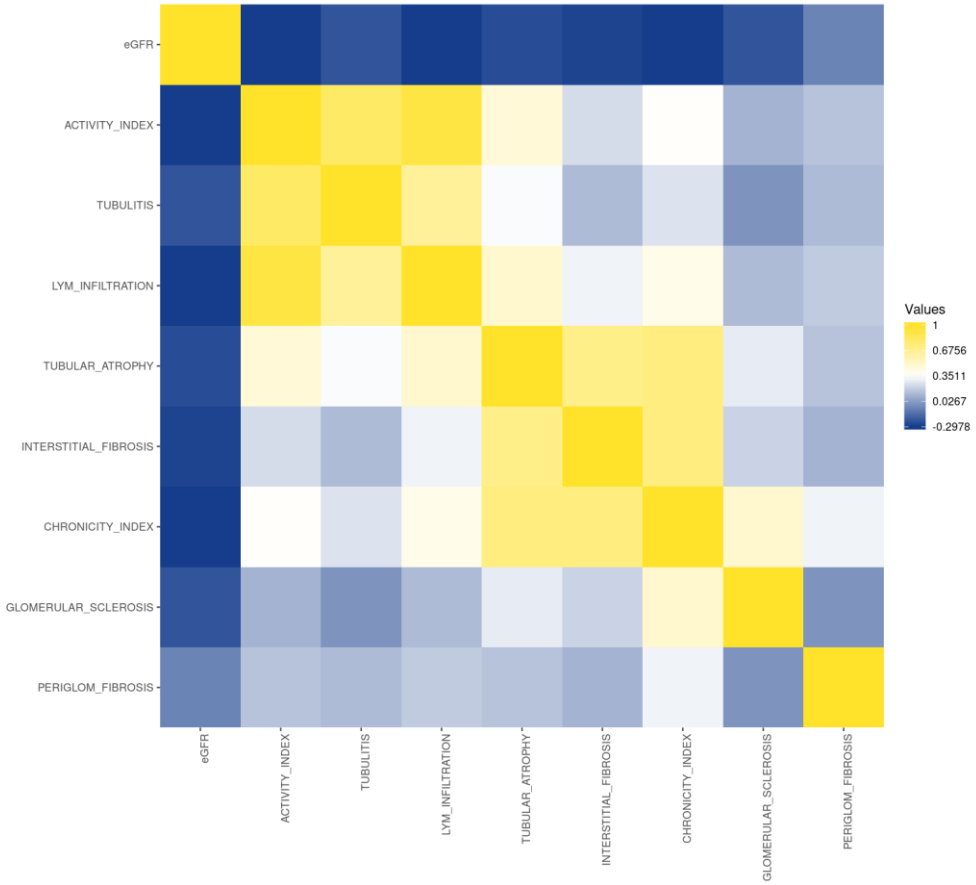

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