

OP 03

Is Neutrophil-Gelatinase associated Lipocalin a Sensitive Indicator of Paediatric Renal Health over Albuminuria in Communities with High Burden of Chronic Kidney Disease of Uncertain Aetiology in Sri Lanka?

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Background: Albuminuria is a reliable indicator of kidney diseases, particularly at late proteinuric stages, and due to its low sensitivity, early renal injury is mostly unappreciated in clinical screening. On the contrary, neutrophil-gelatinase associated lipocalin (NGAL) is known as a sensitive marker of early renal injury and its applicability in the detection of paediatric renal injury is not evident in Sri Lanka.

Objectives: To assess the utility of urinary NGAL as a biomarker to interpret paediatric renal health in the communities affected by chronic kidney disease of uncertain aetiology (CKDu), against the conventional marker, albumin creatinine ratio (ACR).

Methods: A cross-sectional study was conducted with 273 school students (12-16 years of age) from CKDu endemic regions in Polonnaruwa district (boys: 57, girls: 69) and CKDu non-endemic regions in Monaragala district (boys: 64, girls: 83). Urinary ACR and creatinine-adjusted NGAL were considered as the markers of renal function.

Results: The median (IQR) urinary NGAL levels (ng/mg Cr) of the girls 3.45 (2.38-5.68) and boys 3.49 (2.12-6.51) in the CKDu endemic regions were significantly high ($p < 0.001$) compared to those of the girls 1.54 (0.78-2.76) and boys 1.76 (0.93-3.38) in the CKDu non-prevalent areas. However, the median (IQR) ACR levels (mg/g) of girls, 2.13 (1.48-3.91) and boys, 1.64 (1.03-2.73) in CKDu endemic areas showed no significant difference ($p > 0.05$) compared to the ACR levels of girls, 2.86 (1.56-3.97) and boys 2.13 (1.26-3.08) in CKDu non-endemic areas. Urinary ACR of the children was very low and indicated no albuminuria.

Conclusions: Significantly elevated urinary NGAL expression may be an important indicator of early renal injury, particularly in the absence of albuminuria in children from CKDu endemic regions. According to these preliminary investigations, NGAL appears to be a more sensitive marker of early renal injury, and its prognostic value must be validated further with detailed studies.

Keywords: Children, Chronic Kidney Disease, NGAL, Renal injury, Rural Sri Lanka

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