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Elevated urinary Cystatin C level: A potential evidence of subclinical renal injury in normoalbuminuric children in CKDu affected regions in Sri Lanka

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Background: Cystatin C is an emerging biomarker with enhanced sensitivity over conventional biomarkers in the characterization of early renal injury. However, the diagnostic efficacy of Cys-C is not well studied among pediatric populations, particularly in the regions with high burden of Chronic Kidney Disease of unknown aetiology (CKDu).
Objective: The goal of the present study was to study the potential of urinary cystatin C (UCys-C) as an early indicator to characterize kidney injury in pediatric populations in Sri Lanka.
Methods & Materials: A cross-sectional study was conducted with a total of 358 school children of 12-16 years of age. Based on multi-stage stratified random sampling, 200 children from CKDu endemic regions in Padaviya, Sri lanka (North Central Province) and 158 children from CKDu non-prevalent regions in Sevanagala, Sri Lanka (Sabaragamuwa province) were recruited. The first void, early morning urine samples, collected from the children were analyzed for urinary creatinine, albumin and Cys-C. Mann-Whiteny U test was used for comparison at 5% (0.05) significance level.
Results: Children in CKDu endemic areas reported significantly high (p=0.009) urinary Cys-C expression, median (IQR); 68.08 (26.75-177.77ng/mg) Cr compared to the children in CKDu non-endemic regions 43.03 (21.59-96.11 ng/mg) Cr. The median (IQR) UCys-C level for girls 75.26 (23.90-190.10 ng/mg) Cr in CKDu endemic regions was significantly higher (p=0.013) than that of the girls 43.55 (20.07-90.30 ng/mg) Cr in CKDu non-endemic regions while there was no significant difference between median UCys-C levels of boys in CKDu endemic [59.42(30.54-129.82 ng/mg) Cr] and CKDu non-endemic [41.24(22.18-112.16 ng/mg) Cr] regions. Urinary Albumin Creatinine Ratio (UACR) in children showed no significant variation between the two study groups.
Conclusion: Within the context of the findings, elevated urinary Cys-C expression may be a potential indication of low-grade renal injury in children, particularly in CKDu endemic regions. However, these preliminary observations may need further verifications with detailed studies.
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