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Evaluation of Thyroid Function in Chronic Kidney Disease in Children

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Objectives: To evaluate the prevalence of hypothyroidism in children with CKD and the relationship between hypothyroidism and degree of proteinuria.

Methods: Observational cross-sectional study, conducted in a tertiary care teaching hospital, west India from March 2010 to Feb 2022. The data of the patients from 1 years to 18 years of age with diagnosed cases of CKD (stages 2–5), who visited multi-disciplinary CKD clinic were reviewed. The data like anthropometric measurements, baseline laboratory investigations including spot urine protein creatinine ratio(UP: UC), thyroid function test (electrochemiluminescence method), and antiTPO(thyroid peroxidase) antibody level were recorded. SPSS version 23.0 was used for analysis.

Results: Fifty cases were enrolled. The mean age of presentation was 102 ± 53 months, and 76% were boys. Overall, 13 cases (26%) had hypothyroidism. The prevalence of hypothyroid cases increased as CKD stages advanced (23% of hypothyroid cases [3/13] in CKD stage 2–3 vs. 73% of hypothyroid cases [10/13] in CKD stage 4–5). No hypothyroid case was found when spot UP: UC was <0.2. Higher UP: UC was associated with an increased prevalence of hypothyroidism. CKD cases in sub-nephrotic proteinuria group, 20% had hypothyroidism, while in nephrotic-range proteinuria group thisproportion was 39.1%. The Pearson correlation between TSH and spotUP: UC in overt hypothyroid cases was moderate positive (r = 0.56).

Conclusions: 26% of children with CKD were observed with hypothyroidism (subclinical or overt) especially in the presence of higher degree of proteinuria. Large multicentric studies are necessary to establish the correlation.

Demographic, clinical and laboratory parameter of all patients