Beta-Thalassemia Traits Presenting as Disproportionate Anaemia in Chronic Kidney Disease of Unknown Aetiology (Ckdu): Single Centre Experience in Girandurukotte

T. Sonnadara[1, 2]*, M. Bandara[2], P. Gamage[2], S. Nanayakkara[2], J.G.S. Ranasinghe[3], N. Alles[1], V. Rajapaksha[2], N. Nanayakkara[2]

[1]*Department of Pharmacy, Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka*
[2]*Center for Research, National Hospital Kandy, Sri Lanka*
[3]*Department of Biochemistry, Faculty of Medicine, Manipal University College of Malaysia, Malaysia*
**thamalu@ahs.pdn.ac.lk*

Sri Lanka reports carrier prevalence of 9.9% for α^{+}-thalassemia and 2.5% for β-thalassemia. Although β-thalassemia carriers are typically asymptomatic, they may develop severe anaemia when coexisting conditions such as chronic kidney disease. This comorbidity can result in resistance to conventional therapies, including hematinics and erythropoietin. This study presents the findings from a cross-sectional analysis of patients with coexisting β-thalassemia trait and CKDu, who presented with disproportionate anaemia. The study aims to determine the prevalence of β-thalassemia trait among the CKDu patient cohort in Girandurukotte who remain anaemic despite standard erythropoietin and hematinic therapy, to characterize their haematological indices alongside the renal function, and to highlight the importance of implementing tailored screening and management strategies for this subgroup. All confirmed CKDu patients attending the Girandurukotte renal clinic whose haemoglobin (Hb) remained below anaemia thresholds (men < 13 g/dL, women < 12 g/dL) and whose MCV was < 80 fL after ≥ 3 months of combined erythropoietin and haematinic therapy were screened. Blood samples from 44 patients were screened for β-thalassemia by HPLC (HbA_2 > 3.5%). Complete blood counts provided mean corpuscular volume (MCV); renal function was calculated using the CKD-EPI equation. Ethical approval was granted by the Faculty of Medicine, University of Peradeniya Ethics Review Committee (Ref. 2022/EC/02). Total 39 out of 44 patients (88.6%; 21 males, 18 females) reported HbA_2 levels above 3.5%, confirming the diagnosis of β-thalassemia trait. Laboratory parameters had mean Hb 9.2 g/dL (SD 1.3; range 6.0–11.7), mean MCV 65.5 fL (SD 3.2; range 60.0–73.6), and estimated glomerular filtration rate values ranging 12.3–63.2 mL/min/1.73 m² representing stages of CKDu (2-5). This study underscores the coexistence of β-thalassemia trait and CKDu as a contributor to hypochromic, microcytic anaemia that is unresponsive to conventional treatment. The findings emphasize the need for routine screening for hemoglobinopathies in patients with CKDu. Early identification enables tailored management by avoiding unnecessary escalation of erythropoietin or iron dosing, facilitating genetic counselling, and development of targeted treatment protocols for unique patient subgroups.

Keywords: β-thalassemia, CKDu, anemia, iron overload, hemoglobinopathy