

A Study on Indicators of Nutritional Status in Chronic Kidney Disease of Uncertain Aetiology (CKDu), Sri Lanka

W.B.N.T. Fernando*¹, **K.R.D. Hemade**¹, **A.T. Herath**¹, **M.Z. Badurdeen**¹, **D.P.G.S. Kumudumali**¹, **T.W. Hettiarachchi**¹, **S.H.T. Sudeshika**², **D.T.D.J. Abeysekara**¹, **J.G.S. Ranasinghe**³ and **N. Nanayakkara**⁴

¹Centre for Education, Research and Training on Kidney Diseases (CERTKiD), Faculty of Medicine, University of Peradeniya, Sri Lanka

²Department of Pharmacy, Faculty of Allied Health Sciences, University of Peradeniya

³Department of Biochemistry, Faculty of Medicine, University of Peradeniya

⁴Transplant and Dialysis Unit, Teaching Hospital, Kandy, Sri Lanka

*buddhifernando08@gmail.com

Introduction: Malnutrition is reported frequently in the patients with chronic kidney disease. Even though comprehensive studies are not available, CKDu is recorded in disadvantaged populations with low body mass index (BMI). The objective of the study was to determine the variations in nutritional markers in non-dialysis CKDu patients.

Materials and Methods: A total 119 biopsy proven, non-dialysis patients were recruited from a CKDu endemic area. BMI was calculated and a 5 ml of blood was taken at the recruitment. Clinical parameters including, cholesterol, ferritin, iron, total iron binding capacity (TIBC), transferrin binding saturation (TSAT), vitamin B₁₂, albumin, phosphorous (P) and Hemoglobin (Hb) were measured. Summary statistics, one sample t-test and one-way ANOVA were performed.

Results: Of 119 patients, 22 were females (18.5%) and 97 were males (81.5%). The mean age of males and females were 51.3 ± 10.2 years and 50.8 ± 8.2 years respectively. BMI of 56 % males and 52 % females were in normal range whereas 16 % of males and 5 % of females had BMI < 18 and 28 % males and 43 % females had BMI > 24. Majority of patients had below normal Hb and TSAT values while other markers being normal. Mean values of the other variables are shown in Table 1. According to the t-test results, only Hb (p = <0.001), Iron (p = 0.002), P (p

= 0.041) and TSAT (p = 0.025) significantly varied with the gender. Results of the one-way ANOVA showed only Hb (p = 0.028 for males and p = 0.021 for females) and P in males (p = 0.025 for males and p = 0.322 for females which is not significant) varied significantly with the stage of kidney disease.

Discussion: Below normal values of Hb and TSAT in both males and females and the significant differences in Hb observed with the stage, could be attributed to manifestation of anemia in CKDu. Majority of people having a normal or higher BMI indicates an acceptable nutritional status among the patients. Iron and vitamin B₁₂ were normal in most of patients, due to the supplements they receive at the clinic upon diagnosis.

Conclusion: Evidence from this study indicates a comparatively satisfactory nutritional status among the CKDu patients.

Acknowledge: Financial assistance from National Research Council of Sri Lanka (Grant No TO 14-05)

References:

1. Cano NJM, Aparicio M, Brunori G et al., ESPEN guidelines on parenteral nutrition: adult renal failure. *Clin Nutr.* 2009. 28: 401 – 414.
2. Druml W and Kierdorf HP. Parenteral nutrition in patients with renal failure: guidelines on parenteral nutrition Chapter 17. *GMS.* 2009. 7: 1-11.

| No | Variable | Male (Mean \pm SD) | Female(Mean \pm SD) |
|----|----------------------------------|----------------------|-----------------------|
| 1 | BMI | 21.86 \pm 3.53 | 23.51 \pm 3.99 |
| 2 | Hb (g/dL) | 12.39 \pm 1.51 | 10.81 \pm 1.10 |
| 3 | Ferritin (ng/mL) | 60.44 (median) | 103.78 (median) |
| 4 | TSAT (%) | 17 \pm 7.43 | 13.55 \pm 4.8 |
| 5 | TIBC (μ mol/L) | 96.09 \pm 26.22 | 92.31 \pm 26.65 |
| 6 | Serum Iron (μ mol/L) | 15.13 \pm 7.69 | 12.2 \pm 3.52 |
| 7 | Serum Albumin (g/L) | 44.14 \pm 2.72 | 43.2 \pm 2.04 |
| 8 | Total Cholesterol (mmol/L) | 5.02 \pm 1 | 5.07 \pm 1.18 |
| 9 | Vitamin B ₁₂ (pg/mL) | 433.69 \pm 134.48 | 433.61 \pm 97.91 |
| 10 | Phosphorous (mmol/L) | 1.04 \pm 0.22 | 1.19 \pm 0.30 |

Table 01. Summary of nutritional markers