

## **Prevalence of Biochemical Markers of Chronic Kidney Disease – Metabolic Bone Disease (CKD-MBD) in Kandy, Sri Lanka**

**J. Punchihewa<sup>1</sup>, M. Epitakumbura<sup>2</sup>, C.Dasanayake<sup>2</sup>, D.S. Jayawardana<sup>2</sup>, W.B.N.T. Fernando<sup>3</sup>, T.W. Hettiarachchi<sup>3</sup>, S.H.T. Sudeshika<sup>3,4</sup> and N. Nanayakkara<sup>2</sup>**

<sup>1</sup>*Microbiology Unit, Teaching Hospital Peradeniya, Sri Lanka*

<sup>2</sup>*Transplant and Dialysis Unit, Teaching Hospital, Kandy, Sri Lanka*

<sup>3</sup>*Centre for Education, Research and Training on Kidney Diseases (CERTKiD), Faculty of Medicine, University of Peradeniya, Sri Lanka*

<sup>4</sup>*Department of Pharmacy, Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka*

*\*thilinis@gmail.com*

**Introduction:** Chronic Kidney Disease (CKD) is a global health problem affecting 5-10% of the world population. Metabolic bone disease (MBD) is one of the main manifestations of CKD, found almost universally in the patients with CKD stages 3–5. There is lack of scientific evidence on bone profiles of patients with CKD in Sri Lanka. Therefore the main objective of the current study was to describe the pattern of biochemical markers of MBD in CKD patients in Kandy, Sri Lanka.

**Materials and Methods:** CKD patients (n=110) of stage 3 – 5 registered in the renal clinic of Teaching Hospital, Kandy (THK) were recruited with their written consent. Blood samples were obtained and centrifuged. Serum creatinine, calcium, phosphate, alkaline phosphatase (ALP) and parathormone hormone (PTH) levels were determined using the separated serum. Estimated glomerular filtration (eGFR) was calculated and data were analysed by using SPSS (Version 23). Ethical approval was obtained from Ethical Review Committee of Faculty of Medicine, University of Peradeniya.

**Results:** Of the study cohort, 26% were from CKD stage 3, 44% were from 4 and 30% were from 5. Total serum calcium, phosphate, ALP and PTH levels of CKD patients ranged between 0.33 – 2.75 mmol/L, 0.58 – 3.17 mmol/L, 43.9 – 651.5 U/L and 8.739 – 795.677 pg/mL respectively. Forty seven

percent (47%) patients had hypocalcemia, 81% had hyperphosphatemia, 73% had high ALP and 63% had high PTH. There was a significant weak, positive correlation between total calcium level and ALP ( $r=0.247$ ,  $n=110$ ,  $p<0.01$ ). There was also a significant moderate positive correlation between serum phosphate and PTH ( $r=0.323$ ,  $n=110$ ,  $p<0.01$ ). A negative correlation was observed between serum phosphate level with calcium ( $r=-0.367$ ,  $n=110$ ,  $p<0.01$ ) and ALP ( $r=-0.202$ ,  $n=110$ ,  $p<0.01$ ).

**Discussion:** Reference ranges of calcium, phosphate, ALP and PTH levels ranged between 2.1 -2.35 mmol/L, 0.87 – 1.07 mmol/L, 45 – 145 U/L and 10 – 62 pg/mL respectively. There is sufficient scientific evidence shown in other countries to prove hypocalcemia, hyperphosphatemia and high levels of PTH in CKD patients who belongs stages 3 -5.

**Conclusion:** This limited data reveals that prevalence of markers in MBD among CKD patients in Kandy, Sri Lanka is similar to the known pattern of CKD.

**Acknowledgement:** *Financial assistance from Ministry of Health and National Research Council of Sri Lanka (Grant No TO 14-05)*

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