STUDY OF SERUM FIBROBLAST GROWTH FACTOR- 23 (FGF23) LEVELS IN CHRONIC KIDNEY DISEASE

BACKGROUND:

Chronic kidney disease (CKD) is a major public health problem all over the world leading to poor outcomes like End Stage Renal Disease (ESRD), Cardio Vascular Disease (CVD) and Premature Death.

Fibroblast growth factor (FGF)-23 is a recent phosphatonin secreted by the osteocytes acting as a key regulator of phosphate homeostasis. It initiates secondary hyperparathyroidism in patients with CKD. Serum FGF-23 levels rise progressively as renal function declines and serumFGF-23 is an independent predictor of CKD progression.

AIMS AND OBJECTIVES:

To evaluate the role of FGF23 as an early marker of CKD – MBD and to estimate serum FGF-23 levels in CKD cases and healthy (age and sex matched) controls.

MATERIALS AND METHODS:

This cross-sectional study was conducted at MGMGH, Trichy. 45 CKD cases and 45 healthy controls were selected for the study who were of 20-75 years of age. CKD is divided into 5 stages as per NKF-K/DOQI Classification.

Serum analyses of FPG, Serum Urea, Creatinine, Uric acid, Albumin, Sodium, Potassium, Calcium, Phosphate, ALP, FGF23, Urine albumin and USG Abdomen were
done. eGFR calculated using CKD-EPI formula. Student t-test, ANOVA and Pearson’s correlation coefficient were used for the statistical analysis.

RESULTS AND DISCUSSION:

There was a statistically significant difference in serum FGF-23 levels between cases (mean 730.70 ± 492.72) and controls (mean 39.49 ± 12.47). With decreasing eGFR in CKD, serum FGF23 levels increase prior to increasing serum phosphate. Serum FGF23 levels increase as early as stage 2 of CKD. The difference in mean serum FGF-23 levels, serum phosphate between various eGFR groups were statistically significant (p<0.05) among the cases.

CONCLUSION:

FGF23 is involved in mineral metabolic disorders implicated in CKD-MBD. Serum FGF23 levels were significantly increased in patients with CKD prior to increase in serum phosphate levels and serum FGF23 levels increase progressively from early to late stages of CKD. Higher the serum FGF23, more severe is the disease. Serum FGF23 may thus be considered as an early marker of progression of CKD.

KEYWORDS: CKD, FGF23, CKD-MBD, eGFR, Phosphate