

SERUM SOLUBLE α KLOTHO AND FGF 23 LEVELS IN CHRONIC KIDNEY DISEASE

ABSTRACT

Background:

Chronic kidney disease is an emerging global health issue with prevalence between 11 to 13%. Pathological variations of Klotho – FGF 23 in chronic kidney disease are implicated as clinical biomarkers and may bring forth novel therapeutic strategies. The FGF 23 – Klotho endocrine axis plays a vital role in mineral metabolism. Transmembrane Klotho is expressed in renal tubules and acts as a co-receptor for FGF 23. Circulating α Klotho results from the shedding of membrane Klotho and involves in transport of calcium and phosphate.

Aim:

To estimate the level of serum soluble α Klotho and FGF 23 levels in CKD patients and to establish its role in chronic kidney disease - mineral bone disease.

Study design:

Case control study

Group A - individuals diagnosed with CKD (KDOQI guidelines)

Group B- age and sex matched healthy subjects.

Methodology:

Serum urea, creatinine, calcium, phosphate, urine PCR - spectrophotometric method

Serum soluble α Klotho & FGF 23 –ELISA

Serum PTH-ECLIA

Statistical Analysis:

Data analysis- SPSS software, Student-t test, Chi-square test, multiple regression analysis, Pearson correlation and ROC.

Results:

Serum soluble α Klotho and FGF23 were assayed in 60 CKD patients (age 51 ± 11 years) in various stages. Serum Klotho was lower than normal (3.33 ± 1.37 versus 5.61 ± 2.12 ng/mL, p value -0.001). Klotho correlated positively with eGFR and negatively with FGF 23. FGF 23 was higher than normal (337.17 ± 156.17 versus 221.67 ± 37.13 pg/mL, p value -0.001). FGF 23 correlated negatively with eGFR and Klotho. Changes in Klotho and FGF23 precede the changes in PTH, calcium and phosphate.

Conclusion:

Our data indicate a negative effect of renal disease on Klotho causing tubular resistance to FGF 23 which is increased accordingly. Thus Klotho and FGF 23 may be considered as early markers of CKD progression and complications.

Keywords:

Klotho; FGF 23; PTH; Vitamin D; Calcium; Phosphate; Chronic kidney disease