SERUM LEVELS OF OSTEOPROTEGERIN, SOLUBLE RANKL, FIBROBLAST GROWTH FACTOR 23, SCLEROSTIN, VITAMIN D AND OSTEOCALCIN IN CHRONIC KIDNEY DISEASE: RESULTS OF RETROSPECTIVE PILOT ANALYSIS.
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Introduction and Objectives
Osteoprotegerin (OPG), soluble RANKL (sRANKL), Fibroblast growth factor 23 (FGF23), sclerostin, vitamin D and osteocalcin are markers involved in bone formation and resorption. This study investigated the levels of studied bone markers and their associations with other biochemical parameters in patients with chronic kidney disease (CKD).

Materials and Methods
This cross-sectional case study involved 67 patients (mean age 61.08 ±15.40 years; 40 males, 27 females. Serum concentrations of OPG, sRANKL, FGF23, sclerostin were measured using enzyme immunoassay, and osteocalcin and vitamin D were analysed using electro-chemiluminescence technology.

Results
The levels of OPG, sRANKL, FGF23, sclerostin, osteocalcin and vitamin D were not significantly different in terms of gender. The levels of FGF-23 were different in CKD patients divided in those with lower and higher creatinine clearance of 30 ml/min (292.68 ± 3.66 vs. 51.47 ± 3.47 RU/ml; P<0.003). The levels of OPG were lower in CKD patients below PTH level lower than median (27.32 mmol/l) compared with those above (9.30 ± 3.62 vs. 7.25 ± 3.81 mmol/l; P<0.032). The levels of vitamin D were higher in CKD patients with higher creatinine clearance of 30ml/min (19.95 ± 3.17 vs. 11.13 ± 8.49 ng/ml; P<0.001). Osteocalcin serum levels were higher in patients with lower creatinine clearance of 30 ml/min (30.93 ± 2.73 vs. 70.59 ± 5.44 μg/l; P=0.002) and PTH level above the median value (74.15 ± 3.43 vs. 43.17 ± 3.02 μg/l; P=0.013). We found significant positive and negative correlations between the levels of measured markers and other biochemical variables.

Conclusions
Our study shows for the first time simultaneous measurements of OPG, sRANKL, FGF23, sclerostin, osteocalcin and vitamin D in patients with CKD. These results may be important in the evaluation of the systemic disturbance of bone and mineral metabolism in CKD patients.

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Key Words
chronic kidney disease; bone metabolism; biochemical markers;