Abstract

Introduction: Chronic kidney disease (CKD) is associated with loss of bone mineral density (BMD). Hence, we analyzed the bone mineral density (BMD) determined by dual-energy X-ray absorptiometry (DEXA) and bone turnover markers (calcium, vitamin D, PTH and ALP) in CKD patients, over a year period.

Method: Records of 1550 people who had been scanned for BMD in year 2015 were reviewed. Data were obtained by electronic system then analyzed using SPSS.

Results: Among 505 patients with abnormal BMD, 87.3% were in early stage CKD stage I-II, 8.5% were in CKD stage III-V and 4.2% did not have renal tests. 95 were male (18.8%) with a mean age of 57.0 years and 410 (81.2%) were females with a mean age of 55.8 years. Patient of ≥65 years had more pathological T-score than those who were younger than 65 years old in both femoral and hip T-scores ($P < 0.001$.). Among CKD patients, those with late CKD (stage III-V) had less BMD measurements and more pathological T-score than those with early CKD (stage I-II) in both femoral and hip, P values of 0.007 and 0.027, respectively.

While there was significant positive correlation between parathyroid hormone (PTH) level and the pathological T-score of both femoral and hip, P values 0.003 and 0.008, respectively. There was statistically non-significant negative relationship between lumbar T-score and PTH.

Female had a worse T-score at the lumbar region whereas male had a worse T-score at the femoral region. There was no significant difference between males and females for the T-score at hip region.

Conclusion: Measurements of BMD by DEXA might be a useful test to demonstrate bone loss in CKD patients. Femoral and hip are more affected, however DEXA might not able to detect bone loss in lumbar area of CKD patients. PTH level is associated proportionally to the degree of bone loss. More studies are needed to determine if DEXA techniques is enough to distinguish the quantity of bone loss between different stages of CKD.