

## Association of Serum Osteoprotegerin with Bone loss in Chronic Kidney Disease: From the KNOW-CKD Study

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**Background:** Osteoprotegerin (OPG), a potent inhibitor of osteoclast activation, decreases bone resorption and has protective effects on bone mineral density (BMD). This study examined the association between serum OPG and bone loss in patients with chronic kidney disease (CKD), a condition associated with increased risk of mineral and bone disorder.

**Methods:** BMD at the lumbar spine, total hip and femur neck was assessed by dual energy X-ray absorptiometry; and serum OPG was measured at baseline in 1,452 CKD patients in the prospective KoreaN Cohort Study for Outcome in Patients with Chronic Kidney Disease. Osteoporosis was defined to T score  $\leq$  -2.5 in patients aged over 50.

**Results:** Increasing quartiles of serum OPG were significantly associated with lower BMD (lumbar spine, total hip and femur neck) compared with the lowest quartile of serum OPG. Multivariable linear regression model indicated that serum OPG was independently associated with decreased lumbar spine BMD (B, -0.491; 95% confidence interval [CI], -0.879, -0.104;  $p=0.013$ ); but total hip and femur neck BMD were not associated with serum OPG in women. No independent association was found between serum OPG and BMD in men. In multivariable logistic regression analysis, serum OPG was associated with increased risk of osteoporosis in women, but was not in man (odds ratio, 3.89; 95% CI, 1.32-11.49,  $p=0.014$ ; odds ratio, 0.49; 95% CI, 0.12-2.04,  $p=0.330$ , respectively).

**Conclusion:** Serum OPG was independently associated with lumbar spine BMD and increased risk of osteoporosis in female CKD patients. However, these associations were not found in male CKD patients.

**Key Words:** Osteoprotegerin, CKD, BMD