BONE

# Osteoprotegerin and bone loss

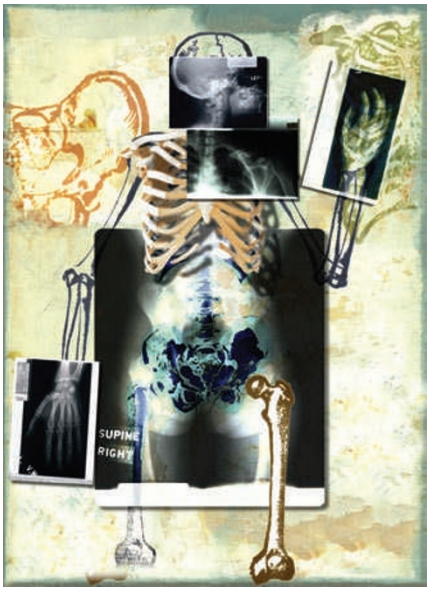
The osteoprotegerin–RANKL (receptor activator of nuclear factor κB ligand) system is a key regulator of osteoclastogenesis that links estradiol, the immune system, vitamin D, parathyroid hormone and bone turnover. A new study published in *Osteoporosis International* reveals that BMD is negatively associated with serum osteoprotegerin levels in postmenopausal women who do not receive hormone replacement therapy.

"Longitudinal population-based studies on the relationship between the osteoprotegerin–RANKL system and the development of osteoporosis are sparse," explains Lone Jørgensen, lead author of the study. "We therefore decided to investigate the role of this system on changes in BMD in men and women who participated in a large-scale, population-based study."

Jørgensen *et al.* assessed concentrations of osteoprotegerin, RANKL, vitamin D and parathyroid hormone in 2,003 men and 2,134 women aged >24 years. BMD of the forearm was measured at baseline and after 6 years. The women were stratified for menopausal status and the use of hormone replacement therapy.

At baseline, BMD was negatively associated with osteoprotegerin levels in both men and women. Loss of BMD over 6 years, however, only correlated with osteoprotegerin levels in postmenopausal women not using hormone replacement therapy. No relationship between changes in BMD and osteoprotegerin was found in men, premenopausal women or postmenopausal women who received hormone replacement therapy. Bone loss was not associated with concentrations of RANKL in any of the subgroups.

The study was limited by the fact that 37% of the participants had serum RANKL levels below the limit of detection. "Serum concentrations of osteoprotegerin and RANKL are produced by many tissues and do not fully reflect the local milieu within the bone microenvironment," points out Jørgensen, who further suggests "the associations could represent a counterregulatory mechanism in women deficient of estrogen, reflecting an attempt to control osteoclast activity during bone loss."




*Linda Koch*

**Original article** Jørgensen, L. *et al.* Bone loss in relation to serum levels of osteoprotegerin and nuclear factor-κB ligand: the Tromsø Study. *Osteoporos. Int.* doi:10.1007/s00198-009-1035-6