

Abstract

Objectives: The aim of this study was to evaluate the levels of osteoprotegerin (OPG) and receptor activator of nuclear factor kappa B ligand (RANKL), in patients with rheumatoid arthritis (RA) and the relation between these parameters and bone mineral density (BMD) and disease activity, investigating the possible role of the OPG/RANKL system in RA related bone loss.

Materials and methods: A total of 50 patients with rheumatoid arthritis and 20 healthy controls were enrolled in the study. BMD of nondominant forearm, lumbar spine(L1–4) and proximal femur, including femoral neck, Wards triangle, greater trochanter were assessed using dual-energy X-ray absorptiometry. The serum OPG and RANKL were measured by ELISA method, activity was assessed by DAS28 score, disability by HAQ.

Results: RA patients had a higher incidence of osteoporosis (23/50, 46%) than that in healthy controls (3/20, 15%)($p=0.001$). They displayed lower BMD values than controls at positions of all assessed regions. Compared with healthy controls, RA group showed significantly higher mean serum levels of RANKL (4.7 ± 4.2 vs. 3.0 ± 3.1 ng/dl, $p=0.001$), lower mean serum levels of OPG (331.2 ± 143.6 vs. 540.6 ± 229.4 pg/ml, $p=0.001$) and mean OPG/RANKL ratio (531.6 ± 149.4 vs. 869 ± 1733.8 , $p=0.001$).

Conclusions: These data suggest that, in RA patients, an altered modulation of the OPG/RANKL system resulting in increased RANKL and decreased OPG in peripheral blood, could contribute to the bone loss characteristic and the generation of osteoporosis in these patients.