

## **BONE MINERAL DENSITY, BONE FORMATION AND OXIDATIVE STRESS MARKERS IN POSTMENOPAUSAL WOMEN WITH OSTEOPOROSIS: A CASE-CONTROL STUDY**

**F. Lumachi, V. Camozzi, G. Luisetto, F. Fallo**

*Department of Surgical & Gastroenterological Sciences; Department of Medical and Surgical Sciences, University of Padua, School of Medicine, Padua, Italy*

**BACKGROUND:** Oxidative stress is responsible for the pathophysiology of aging, and in addition it is an important mediator of bone loss. The aim of this study was to investigate whether oxidative stress may have an impact on bone mineral density (BMD), and its relationship between bone biochemical markers. **PATIENTS AND METHODS:** Both study population and controls were obtained from a cohort of 284 postmenopausal women who underwent osteodensitometry (DXA) using dual-energy X-ray absorptiometry (Hologic QDR 4500 C, Waltham, MA, USA), with measurement of lumbar and femoral BMD. Nine-teen postmenopausal patients (cases) with osteoporosis (T-score < -2.5 standard deviations) and 20 non-osteoporotic age-matched controls were enrolled in the study. **RESULTS:** PTH ( $79.2 \pm 13.7$  vs.  $71.4 \pm 14.2$  ng/L), calcium ( $2.31 \pm 0.54$  vs.  $2.40 \pm 0.58$  mmol/L), and bone alkaline phosphatase ( $63.4 \pm 9.3$  vs.  $69.3 \pm 8.7$  U/L) serum levels did not differ (p=NS) between groups, while oxidative stress serum makers, such as nitric oxide (NO:  $57.4 \pm 5.1$  vs.  $47.9 \pm 7.2$   $\mu$ mol/L), malondialdehyde (MDA:  $6.61 \pm 0.62$  vs.  $4.83 \pm 0.56$   $\mu$ mol/L), and glutathione peroxidase (GSH-Px:  $1614 \pm 73$  vs.  $1945 \pm 89$  U/L) were significantly (p < 0.01) different (cases vs. controls). A significant relationship between MDA and BMD (r = -0.41, p = 0.006) was found, but there was no correlation (p = NS) between BMD and the biochemical markers. **CONCLUSIONS:** Postmenopausal osteoporotic women show an increased oxidative stress status, suggesting that the administration of antioxidants should protect bones from osteoporosis, and help in the acceleration of healing of fractured bones.