

## Relationship between Grave's disease and effectiveness of its treatment with bone markers

Ebrahim-pour P. (M.D.)<sup>1</sup>, Shoushtari-zadeh P. (M.Sc.)<sup>2</sup>, Hagh-panah V. (M.D.)<sup>1</sup>, Rajabi-pour B. (M.D.)<sup>1</sup>, Sharghi S. (M.D.)<sup>3</sup>.

1- General Physician, Endocrinology and Metabolism Research Center (EMRC), Tehran University of Medical Sciences, Tehran, Iran.

2- M.Sc. in Medical Laboratory Sciences, Endocrinology and Metabolism Research Center (EMRC), Tehran University of Medical Sciences, Tehran, Iran.

3- Assistant Professor, Endocrinology and Metabolism Research Center (EMRC), Tehran University of Medical Sciences, Tehran, Iran.

### Abstract

**Introduction:** Graves' disease (GD) is one of the autoimmune diseases in which the immune system over stimulates the thyroid gland, causing hyperthyroidism. Bone turnover is reported to increase in favor of resorption in overt hyperthyroidism and the rate of resorption is associated with the levels of thyroid hormones. As persistent increase in bone turnover is responsible for accelerated bone loss, patients with Graves' disease may have increased risk for osteoporosis. The aim of this study was to determine relationship between Graves' disease and bone markers.

**Materials and Methods** The subjects of our study were 31 consecutive untreated GD patients and 37 normal volunteers which were matched on sex proportion and age range. GD was diagnosed by suppressed levels of TSH and elevated levels of free T3 (fT3) and free T4 (fT4) and positive thyroid receptor antibody (TR). We investigated the relationship between serum osteocalcin & cross-laps with Graves' disease and then kinds of treatment with PTU and Methimazole after 8 weeks follow up. Student T- test was used to compare the mean values and if necessary non- parametric statistics were used.  $\chi^2$  were used to compare the frequency of variables and if possible Exact Fisher Test was used. P- Values less than 0.05 were considered significant.

**Results:** No significant differences in age and sex between patients and controls were found. Significant differences in serum bone markers and thyroid hormones were detected between patients and controls before therapy. After treatment we found a significant improvement and returning to normal range in all serum lab tests. There weren't any difference in the effect of treatment on thyroid hormones and bone markers between two groups.

**Conclusion:** We found close relationship between Graves' disease and bone markers. So that treatment of Graves' disease can improve bone turnover. These findings indicated that early diagnosis and management of Graves' disease can be effective for osteoporosis prevention in these patients.

**Key Words:** Graves disease, Bone markers, Osteoporosis, BMD, Thyroid, and Hyperthyroidism.

**Corresponding Address:** Dr. Hagh-panah V., Endocrinology and Metabolism Research Center (EMRC), Fifth floor, Shariati Hospital, North Garegar Street, Tehran, Iran.

**E mail:** emrc@sina.tums.ac.ir