PREDICTIVE VALUE OF THE ASSESSMENT OF RISK FACTORS OF OSTEOPOROSIS ON BONE ULTRASONOMETRIC FEATURES IN A NORMAL POPULATION: DATA FROM BOSS STUDY (BRESCIA OSTEOPOROSIS STRATIFICATION OF RISK STUDY)

G. Mazziotti[1], S. Bossoni[1], S. Bonadonna[1], G. Milani[1], D. Cocchi[2], A. Giustina[1]

[1] *Department of Medical and Surgical Sciences, University of Brescia, Brescia, Italy*
[2] *Biomedical Science and Biotechnology, University of Brescia, Brescia, Italy*

Bone mineral density (BMD) measurement is widely recognized as the best single tool to identify patients with osteoporosis and with high lifetime risk of developing bone fractures. However, the cost/benefit value of screening the whole population has been repeatedly challenged.

The objective of this population-based study was to develop a clinical tool to help clinicians identify which subjects are at increased risk for osteoporosis and should therefore undergo further testing with bone densitometry.

In a population-based study (BOSS: Brescia Osteoporosis Stratification of Risk Study), we used a standardized questionnaire to stratify otherwise healthy adults for the risk of osteoporosis and bone fractures evaluated by an ultrasonographic approach. The questionnaire was sent to 488 adult subjects employed at the University of Brescia. Two-hundred- thirty-two subjects answered to the questionnaire and 153 of them (65.9%) were invited to take part to the study since they were categorized as being at risk of osteoporosis (questionnaire score • 8). Five subjects refused, so 148 subjects were enrolled. Eight of these subjects (all women, seven of them in pre-menopausal period with regular menses) (5.4%) were taking GCs for different diseases, whereas 5 subjects (4 females and 1 male) (3.5%) were aware to have a mild hyperthyroidism at the time of the study period. The remaining 135 subjects (112 females and 23 males) were without diseases and were not performing therapies known to affect bone metabolism and structure. All the enrolled subjects underwent a phalangeal ultrasonographic analysis of bone density [DBM Sonic 1200 (Igea, Carpi, Italy)].

In the whole group of 135 subjects at risk of primary osteoporosis, the score of the questionnaire was not significantly correlated with the T-score evaluated by the ultrasonographic approach. Analysing separately the males, the pre-menopausal and post-menopausal females at risk of primary osteoporosis, we found a significant and inverse correlation between the score of the questionnaire and ultrasonographic T-score only in the men (r: -0.32; p=0.05), whereas in the pre- and post-menopausal women the correlation was not significant. Analysing the single determinants of questionnaire in each group, we found that in males the personal and familiar history of bone non-traumatic fractures were the factors that better correlated with T-score and UBPI, the latter being a parameter of bone quality. In pre-menopausal women and post-menopausal women, however, personal history of amenorrhea and replacement treatment with estrogens, respectively, were correlated with UBPI but not with T-score.

The results of this study would suggest that a simple questionnaire may be helpful to identify the males at risk of primary osteoporosis as assessed by an ultrasonographic approach. However, the assessment of some specific factors, such as personal history of amenorrhea and replacement treatment with estrogens, may be of value in pre- and post-menopausal women.