ARE THE ANAMNESTIC RISK ASSESSMENT TOOLS FOR POSTMENOPAUSAL OSTEOPOROSIS APPROPRIATE FOR QUANTITATIVE ULTRASOUND OF THE HEEL? PROPOSAL AND VALIDATION OF A NEW SCORE

M. Ventura[1], G. Osella[1], D. De Feo[2], V. Data[1], R. Vitetta[1], M. Minetto[1], M. Terzolo[1], A. Angeli[1]

[1] Department of Biological and Clinical Sciences, University of Turin, Turin, Italy
[2] Procter & Gamble, Rome, Italy

To verify if the anamnestic scores evaluating postmenopausal osteoporosis risk factors are also appropriate for the diagnosis based on quantitative ultrasound (QUS) and to suggest and validate a new score related to QUS.

OST, ORAI, OSIRIS, NOF, ABONE, AMMEB and pBW (patient body weight) were calculated in 173 healthy postmenopausal women evaluated with a QUS of the heel using the Achilles-Express (GE-Lunar) instrument. Combining the three variables better correlated with Stiffness we developed a new risk score (MAW: Menopause duration, Age, Weight), validated on a sample of 4925 women, extracted from the original database of the ESOPO study. The -5 cut-off of the index yielded the better sensitivity and specificity in order to identify the patients with Stiffness in the osteopenic and osteoporotic range. The AUROC (Area Under the ROC curve) of the single scores ranged from 0.61 and 0.73 when calculated for T-score Stiffness □-2 and from 0.58 and 0.70 using the T-score □-2.5. AUROC and 95% confidence intervals of the MAW score were 0.72 (0.65-0.79) for the T-score □-2 and 0.64 (0.56-0.71) for the T-score □-2.5. The AUROC of MAW score, applied to the validation sample (ESOPO), was 0.69 (0.67-0.70) for the T-score □-2, and 0.69 (0.68-0.70) for the T-score □-2.5. The correlation with Stiffness was r=0.37 (p<0.0001). Sensitivity, specificity, positive predictive value and negative predictive value for the -5 cut-off of the MAW resulted 88%, 31%, 57% and 76% to identify the osteopenic subjects and 91%, 28%, 24% and 90% to identify the osteoporotic ones. These characteristics remained unchanged applying the score to the validation sample (negative predictive value for osteoporosis 89%).

In conclusions, AUROC, sensitivity and specificity of the analyzed scores, used in reference to the QUS, are comparable to those reported in the literature when applied to DXA technique, but our results question the utility of these risk assessment tools. No score has a good diagnostic accuracy (i.e. AUROC >0.90) and only a few (OSIRIS, MAW, OST, AMMEB) achieve, or approximate, the threshold of AUROC 0.70, considered the lower limit to give moderate accuracy. The MAW score, however, is provided of good negative predictive value (90%) for excluding the osteoporosis with the QUS of the heel.