The lean and fat masses, bone mineral density (BMD) were measured by the DXA method (Prodigy, GEHC Lunar, Madison, WI, USA). Appendicular skeletal mass (ASM) was measured at all the four limbs with DXA. We've also calculated the appendicular skeletal mass index (ASMI) according to the formula: ASM/height ($kg/m^2$).

**Results:** We observed a significant decrease of ASM with age (20-29 yrs – 16.5 ± 0.4 kg, 30-39 yrs – 16.4 ± 0.3 kg, 40-49 yrs – 17.0 ± 0.5 kg, 50-59 yrs – 16.9 ± 0.3 kg; 60-69 yrs – 16.5 ± 0.2; 70-79 yrs –15.8 ± 0.3; 80-87 yrs – 15.3 ± 0.3; F = 2.7; p = 0.01). The ASMI values corresponding to a cutoff of low muscle mass by the definitions used were as follows: < 5.5 $kg/m^2$ (European guideline), < 5.7 $kg/m^2$ (< $20^{th}$ percentile of sex specific population), < 4.8 $kg/m^2$ (two SD below the mean of young Ukrainian females aged 20-39 yrs). The prevalence of low muscle mass in women aged 65 yrs and older based on the above three criteria was 12%, 16% and 1.7%, respectively. ASM was positively correlated with total fat mass (r = 0.20, p = 0.0006) and BMD at all sites (BMD of spine (r = 0.22, p = 0.0002), BMD of femoral neck (r = 0.29, p < 0.0001)).

**Conclusions:** The cutoff value of ASMI (< 4.8 $kg/m^2$) was lower in our study compared with Rosetta Study (< 5.5 $kg/m^2$) and similar to Health ABC study (< 5.67 $kg/m^2$).

## CO04. BONE MINERAL DENSITY AND METABOLIC SYNDROME

Vladyslav Povoroznyuk[1], Larysa Martynyuk[2], Nataliya Dzerovych[1], Liliya Martyntyuk[1]

*[1]State Institution "Institution of Gerontology named after D.F. Chebotoriov of National Academy of Medical sciences of Ukraine". [2]State Higher Educational Institution "I. Horbachevsky Ternopil State Medical University of Ministry of Health of Ukraine".*

**Introduction:** Osteoporosis is one of the common diseases which can lead to increasing of morbidity and mortality. The metabolic syndrome (MS), which includes obesity, dyslipidemia, impaired glucose tolerance, hypertension, is a major public health problem also. Traditionally, there is a mind that obesity is protective against osteoporosis but other components of MS are risk factors of it.

**Objectives:** To determine the frequency of low bone mineral density (BMD) in women with MS and obesity alone.

**Methods:** The study involved 1,605 40-79 years old postmenopausal women. Patients were compared into three groups. First group included women without obesity (800 people), second group involved patients with obesity (572 people). MS was diagnosed in women of the third group (233 people). BMD was measured by dual-energy X-ray absortiometry (Prodigy, 2005 yr.). Women were considered to have normal or low BMD according to criteria of the Official Positions of the ISCD, 2007 yr. Data were analyzed using Statistical Package 6.0.

**Results:** Positive association of the BMD indexes and weight in all groups of the examined was revealed. This can indicate the protective effect of obesity on bone tissue. It was found that frequency of the low BMD at the lumber region is higher in the first group women than in patients of the second and third groups (70.08%, 39.98% and 42.49% respectively). The worse situation was shown at the region of the femoral neck. The low BMD was presented in 78.05% of the first group women, 59.79% of the second group patients and 57.93% of the third group people. This can suggest the opinion that spongy bone tissue is prominently damaging in postmenopausal women.

**Conclusions:** Our study estimated that osteoporosis and low BMD are significantly much rarer in women with obesity and MS compared to those without obesity.

## CO05. BONE EVALUATION IN TYPE 2 DIABETES MELLITUS

Raquel Paixão, David Barbosa, Ana Paula Barbosa, Carolina Faria, Catarina Silvestre, Ana Gomes, Ana Sofia Osório, Vânia Gomes, Ema Nobre, José Maria Aragüés, Mário Rui Mascarenhas

*Endocrinology, Diabetes & Metabolism Department, Hospital de Santa Maria-CHLN, EPE, Lisboa.*

**Introduction:** Despite in type 2 diabetes mellitus (T2DM) the bone mineral density is usually normal, an increased fracture rate has been described.

**Objectives:** To evaluate the influence of T2DM in the bone mineral density (BMD) and in the trabecular bone score (TBS) in postmenopausal women.

**Methods:** Transversal controlled study of 173 post-menopausal women, of the metabolic bone diseases out-patient clinic; they were divided in the T2DM and control groups, matched for age, BMI and post-menopause duration. BMD was measured by DXA at $L_1$-$L_4$ and at the femoral neck; TBS was derived from each DXA scan at the lumbar spine. Fasting blood samples were collected for hormonal and biochemical parameters including calcium metabolism. The adequate statistical analysis tests were performed (significance: $p < 0.05$).

**Results:** The mean post-menopause duration [18.2 (± 11.0) vs 18.3 (± 9.7) years], weight [77.0 (± 13.3) vs 77.17 (± 10.7) $kg/m^2$] were similar between the groups. In the T2DM group the mean BMD at the lumbar spine and at the femoral neck were significantly increased, as compared to the control group. Nevertheless, the mean TBS was similar between the groups. Significant correlations between age vs 25(OH)D blood concentrations (r = -0.34), vs BMD at the femoral neck (r = -0.46) and vs BMD at the lumbar spine (r = -0.34) were found in the T2DM group, but not in the control group. The TBS correlated positively with 25(OH)D blood levels only in T2DM.

**Conclusions:** This study shows that T2DM postmenopausal women the mean BMD at the proximal femur and at the lumbar spine are increased, while the mean TBS is identical, as compared with the control group. The 25(OH)D levels seem to affect positively BMD and bone quality evaluated by TBS only T2DM women.

## CO06. FAT MASS, INSULIN RESISTANCE AND VITAMIN D IMPACT ON TRABECULAR BONE SCORE IN MEN

Mário Rui Mascarenhas[1,3], Ana Paula Barbosa[1,3], Nuno Duarte[3], Ana Wessling[3], José Poupino[3], David Barbosa[3], Raquel Paixão[3], Ana Coelho Gomes[3], Catarina Silvestre[3], Carolina Faria[3], Ana Sofia Osório[3], Vânia Gomes[3], Francisco Sampaio[3], Jacinto Monteiro[3], Manuel Bicho[1], Didier Hans[4]

*[1]Endocrinology and Metabolic Diseases, Faculty of Medicine of Lisbon. [2]CEDML-Clinic of Endocrinology, Diabetes and Metabolism of Lisbon Lda. [3]Fracturary Osteoporosis Outpatient Clinic, Endocrinology, Diabetes and Metabolism Department, Santa University Maria Hospital-CHLN, EPE, Lisboa. [4]Lausanne University Hospital, Lausanne, Switzerland.*

**Introduction:** The assessment and qualification of the bone microarchitecture can be indirectly evaluated by the trabecular bone score (TBS) or bone quality. TBS is a non-invasive tool that can explore other factors than BMD that may influence bone strength and fracture risk, such as trabecular density connections and trabeculae separations. Nevertheless, the impact of anthropometric, insulin resistance parameters and 25(OH)D blood levels on TBS remain to be clarified in men.

**Objectives:** To investigate the contributions of weight, body mass index (BMI), total body fat mass, blood insulin concentration and homeostasis model assessment (HOMA) to TBS and vitamin D in a group of men.