

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/m²).

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/m² (European guideline), < 5.7 kg/m² (< 20th percentile of sex specific population), < 4.8 kg/m² (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/m²) was lower in our study compared with Rosetta Study (< 5.5 kg/m²) and similar to Health ABC study (< 5.67 kg/m²).

CO04. BONE MINERAL DENSITY AND METABOLIC SYNDROME

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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 absorptiometry (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 lumbar 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

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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 postmenopausal 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 L₁-L₄ 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/m²] 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

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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.

Methods: BMD at the lumbar spine (g/cm^2) and at the whole-body were accessed by dual-energy X-ray absorptiometry scans (Discovery-W densitometer, Hologic, Inc.) and TBS (obtained from L_1 - L_4 DXA images) were evaluated in a group of 63 normal men aged ≥ 40 years [mean (\pm SD) = 55.0 (\pm 12.3) years]. Fasting blood collections were performed for measurements of the glucose, insulin and 25(OH)D (ng/ml) levels. Insulin resistance was calculated by HOMA. Adequate statistical tests were used (statistical significance for $p < 0.05$).

Results: The effects of anthropometric and biochemical parameters on TBS are shown in the table.

The correlation analysis between TBS and anthropometric, insulin, insulin resistance (HOMA-IR) and 25(OH)D parameters

Parameter	TBS	p
Weight Kg	-0.6281	0.0000
BMI Kg/m ²	-0.7005	0.0000
Total body fat mass kg	-0.6511	0.0000
Fat mass%	-0.5507	0.0000
IRI mcUI/ml	-0.4412	0.0009
HOMA-IR	-0.4989	0.0000
25(OH)D ng/ml	0.3001	0.0169

Conclusions: The results of this study support the hypothesis that weight, total body fat mass, insulin and insulin resistance are inversely associated with TBS values and play a direct role in bone metabolism. Moreover, these data suggest that blood vitamin D concentrations may have an important role on the bone quality accessed by TBS.

CO07. SERÁ QUE A SUPLEMENTAÇÃO COM BAIXAS DOSES DE CÁLCIO PREVINE COM SEGURANÇA AS ALTERAÇÕES ÓSSEAS ASSOCIADAS À DEFICIÊNCIA EM ESTROGÊNIO? – ESTUDO EM RATOS

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Introdução: A suplementação de cálcio no adulto nas doses recomendadas (1-1,2 g) continua a gerar controvérsia por questões de segurança.

Objectivos: Por forma a contornar os riscos associados a esta suplementação, estudou-se o efeito de um suplemento com uma dose inferior cálcio (420 mg) associado a uma fibra solúvel (goma Guar na dose de 450 mg/dia) na prevenção das alterações ósseas associadas à deficiência em estrogénio bem como a sua segurança.

Métodos: Ratos Wistar fêmeas (n = 18) aleatorizados em 3 grupos: sham, ovariectomizados (OVX), ovariectomizados-suplementados (OVX+S) com concha ostra (105 mg/kg) e goma Guar (43 mg/kg) por 53-dias (dose equivalente humana de 420 mg/dia cálcio e 414,5 mg/dia Guar). No dia 60 avaliou-se: peso corporal, depósitos de cálcio na aorta, fígado e rim (coloração Von Kossa), cálcio femoral e urinário (absorção atômica), biomecânica do fémur, ultra-estrutura do osso cortical da tíbia (SEM) e biomarcadores da remodelação óssea. Aplicou-se o teste de Kruskal-Wallis no tratamento dos dados ($p < 0,05$).

Resultados: O peso corporal dos animais suplementados e não suplementados aumentou 22 e 33% respectivamente. Os exames histológicos não revelaram depósitos de cálcio. A remodelação óssea

aumentou ($p < 0,05$) nos OVX e OVX+S. A calciúria aumentou nos OVX ($p < 0,05$) e OVX+S. O suplemento mitigou a hipocalcemia ($p < 0,01$), a redução do cálcio femoral ($p < 0,05$) e a redução da espessura do osso cortical da tíbia enquanto a rigidez e a tensão máxima de fractura do osso femoral aumentaram ($p < 0,05$) quando comparada ao dos OVX.

Conclusões: A suplementação com baixas doses de cálcio de concha de ostras e goma Guar atenuou o ganho de peso corporal, a calciúria, a hipocalcemia e a redução da espessura do osso cortical da tíbia bem como a desmineralização do osso femoral tornando-o mais rígido e resistente à fractura sem risco aparente de depósitos vasculares renais e hepáticos de cálcio.

CO08. CHARACTERIZATION OF A SAMPLE POPULATION OF PATIENTS OF FRACTURARY OSTEOPOROSIS OUTPATIENT CLINIC

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Introduction: Osteoporosis (OP) is a disease with increasing prevalence due to increased life expectancy. It presents high morbidity and mortality by fractures associated with it.

Objectives: Characterization of the population of patients sent for the first time to Fracturary osteoporosis outpatient clinic, HSM-CHLN between 1.01 and 30/10/2015.

Methods: Data collection: 1) of the patients sent to this outpatient clinic, 2) demographic and clinical factors associated with risk factors for OP. The data were submitted to appropriate statistical analysis and significance was set at $p < 0.05$.

Results: Of the 101 patients included 91 (90.1%) were women. The average age was 75.7 (\pm 9.5) years. The average age of menopause was 48.9 (\pm 4.3) years. 5 patients (6.1%) done hormone therapy (HT). 7 patients (7.9%) had a family history of fractures of the proximal femur. 58.4% of patients had hypertension, 18.8% type 2 DM and 10.1% CRF. 93 patients were not addressed any medication, 5 patients were bisphosphonates, strontium ranelate 1 and 2 supplementation with calcium and vitamin D. 19 patients performed therapy with proton pump inhibitors, 7 recently prolonged corticotherapy and 4 therapy with GnRH analogues. 95 patients had never done a DXA.

Conclusions: 10% of men found in this study counteracts the stereotype that OP is an exclusive disease of women. The average age of menopause was within the normal range. In addition, it should be considered other parameters. TH, family history, comorbidity and existence of concomitant therapies. Early recognition of the OP allows the establishment of measures with the aim of reducing the prevalence of fractures and its complications. We consider it essential to integrated approach of this multidisciplinary approach.

CO09. PARKINSON'S DISEASE AND OSTEOPOROSIS: WHAT RELATION?

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Introduction: Parkinson's disease (PD) and osteoporosis are chronic diseases associated with aging. Several studies have reported associations between these two entities, particularly regarding to increased risk of fractures.

Objectives: Review the existing evidence about the relationship between PD and osteoporosis. Review the pathophysiological mechanisms involved.