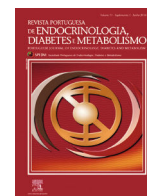


Revista Portuguesa de Endocrinologia, Diabetes e Metabolismo

www.elsevier.pt/rpedm



X Congresso Português de Osteoporose

Hotel Tryp Lisboa Aeroporto, 21 e 22 Junho 2016

COMUNICAÇÕES ORAIS

CO01. POSTTRAUMATIC OSTEOPENIA IN RATS WITH DIFFERENT MODELS OF FEMUR FRACTURES

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Introduction: The reaction of skeleton to the fracture is an important problem in scientific and practical aspect. The majority of investigators pay attention to the changes in injured or (and) contralateral extremity. Data about systemic reaction of skeleton in various types of fractures remains poor and contradictory.

Objectives: To investigate a possible effect of femur fracture to bone mineral loss in vivo, using different fracture models.

Methods: A midshaft tranverse femur fracture in rats stabilized with intramedullary pin (n = 20) and perforated metadiaphysis fracture without immobilization (n = 20) were carried out. Control group (n = 20) was represented by non-operated animals. On 30th day of experiment, dual energy X-ray densitometry was performed. The DEXA results were evaluated based on the presence of internal artifact in rats with intramedullary osteosynthesis.

Results: In rats of control group stable increase of BMD of all sites of skeleton was observed. On the 30th day after fracture in rats with perforated metadiaphysis fracture we noticed increase of BMD of the majority sites of skeleton except statistically significant (p < 0.01) decrease of legs BMD. This reduction can be explained by increase in bone remodeling activity within cortical bone at the affected and probably opposite limb. In rats with the midshaft fracture fixed with pin, intensive loss of bone mass in all sites of skeleton was observed. Along with increased bone remodeling this decrease of BMD can be probably explained by increased consumption of calcium and recruitment of bone mineral needed for callus formation which is considerably larger in case of midshaft fracture. This fact was confirmed by statistically significant (p < 0.001) increase of legs BMD.

Conclusions: The type of fracture and size of callus affect the severity of post-traumatic osteopenia in rats with different types of femur fractures.

CO02. BONE MINERAL DENSITY AND TRABECULAR BONE SCORE IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Introduction: Osteoporosis is a major clinical problem in rheumatoid arthritis patients.

Objectives: To evaluate influence of age, glucocorticoids taken on the trabecular bone score and bone mineral density in patients with rheumatoid arthritis.

Methods: The study included 134 female patients with RA (mean age – 52.4 ± 12.7 years; average duration of disease – 9.1 ± 7.6 years). The patients were divided into five groups by decades and they were divided into three groups depending on glucocorticoids (GC). using: G1 – 37 patients who didn't take GC, G2 – 47 patients who had been prescribed with GC only at exacerbation, G3 – 50 patients who received systemically GC at a dose of ≥ 5 mg. By the method of DXA (Prodigy, GE Lunar, Madison, USA) we measured BMD at the lumbar spine and femur neck. The index of the quality of trabecular bone tissue (TBS) using the method of TBS iNsight (Med-Imaps, Pessac, France).

Results: Significantly decrease BMD of lumbar spine (50-59 year. 0.994 ± 0.245 g/cm² vs 30-39 years. 1.141 ± 0.161 g/cm²; t = 2.1; p = 0.04) and femur neck (50-59 year. 0.716 ± 0.245 g/cm² vs 30-39 years. 0.889 ± 0.231 g/cm²; t = 2.4; p = 0.02) significantly reduce with age. Also the TBS beginning from 50 years at women, with RA, comparatively with women aged 30-39 years (1.156 ± 0.140 mm⁻¹ vs 1.318 ± 0.155 mm⁻¹; t = 3.5; p = 0.001). With age the lowering of this parameter progresses. At the studying of influence of GCs was estimate that patients in G3, had significant lower only indexes of TBS L1-L4 comparatively with the patients in G1 (1.147 ± 0.168 vs 1.250 ± 0.135; t = -3.07; p = 0.003), or G2 groups (1.274 ± 0.138; t = 3.95; p = 0.0002).

Conclusions: TBS L1-L4 and BMD in different part of skeleton significantly decreased with age in women with RA. The admission GC associated with decrease of TBS, while significant changes of BMD of the lumbar spine and femur did not observe.

CO03. SARCOPENIA IN UKRAINIAN ELDERLY WOMEN

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Introduction: Sarcopenia is been defined as an age-related reduction in muscle mass, strength and performance.

Objectives: To evaluate the normative data of lean mass in Ukrainian normal healthy women.

Methods: 301 women aged 20-87 years (mean age – 57.6 ± 0.9 yrs; mean height – 1.62 ± 0.004 m; mean weight – 63.5 ± 0.5 kg, body mass index – 24.2 ± 0.2 kg/m²) were examined. The women were divided into the following age-dependent groups: 20-29 yrs (n = 25), 30-39 yrs (n = 27), 40-49 yrs (n = 22), 50-59 yrs (n = 62), 60-69 yrs (n = 91), 70-79 yrs (n = 59), 80-87 yrs (n = 15).

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.