

**Methods:** BMD at the lumbar spine ( $\text{g/cm}^2$ ) 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  $\geq 40$  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 <sup>2</sup>	-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 tibia (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 tibia 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 tibia 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.

**Methods:** Research guidelines, meta-analysis (MA), systematic reviews (SR) and randomized controlled trials (RCT) in English and Portuguese, in PubMed and medical databases based on evidence. MeSH terms used: "Parkinson's disease" and "osteoporosis". Articles published between January 2006 and January 2016 were selected.

**Results:** Four articles were obtained, but only three met the inclusion criteria. One MA, one SR and one RCT showed a relation between PD and osteoporosis, bone mineral density (BMD) and fracture risk. Patients with PD have an increased risk for osteoporosis when compared to the general population. It was also evident in PD: lower BMD, lower vitamin D levels and an increased risk of fractures. The reduction of bone mass in PD seems to be mainly caused by limited mobility. Endocrine (such as vitamin D deficiency), nutritional and iatrogenic factors also play an important role in the depletion of bone mass. Female sex, PD duration and severity, advanced age and low body mass index were associated with severe osteoporosis.

**Conclusions:** The available evidence supports an increased risk of osteoporosis among PD patients. This fact should alert the clinician about the importance of osteoporosis screening in PD patients. However, more studies are needed, with high methodological quality and patient oriented, in order to demonstrate the health benefit of osteoporosis screening/early treatment in PD patients.

## CO10. O PAPEL DAS ORTÓTESES DE TRONCO NA OSTEOPOROSE

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**Introdução:** As ortóteses de tronco são um componente do tratamento conservador da osteoporose, sobretudo quando o doente desenvolve fracturas osteoporóticas. Podem ter indicação numa fase aguda, subaguda ou crónica da doença. Dada a escassez de evidência, na prática clínica ainda persistem dúvidas quanto ao tipo de ortótese mais indicado, quando se deve utilizar e durante quanto tempo.

**Objectivos:** Avaliar o papel das ortóteses de tronco no doente com osteoporose e as suas principais indicações.

**Métodos:** Revisão da literatura publicada nas principais bases de dados médicas até Março de 2016.

**Resultados:** De um total de 4,236 artigos inicialmente identificados, foram incluídos 12 artigos para análise mais pormenorizada. A literatura evidencia o benefício das ortóteses no controlo da dor, suporte estrutural, melhoria da postura, propriocepção e equilíbrio, contribuindo para a prevenção de deformidades e de novas fracturas osteoporóticas. Os autores descrevem as principais ortóteses de tronco utilizadas nos doentes com osteoporose, particularizando as indicações dos diferentes tipos de ortótese.

**Conclusões:** As ortóteses de tronco apresentam efeito benéfico significativo em certas situações clínicas. Contudo, a sua prescrição deve ser individualizada a cada doente e requer um vasto conhecimento da anatomia, biomecânica, cinesiologia e patologia. São necessários mais estudos com qualidade metodológica que sustentem a evidência do benefício das ortóteses do tronco, nomeadamente a longo prazo.

## WCO01. SKELETAL MUSCLE AND VITAMIN D LEVEL IN WOMEN OF VARIOUS AGES

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**Introduction:** In recent years there has been a number of studies examining the correlation between vitamin D status and skeletal

muscles. However, there are many different approaches to the role of vitamin D metabolism and function of skeletal muscles.

**Objectives:** The aim of the research conducted at the SI «D.F. Chebotarev Institute of Gerontology NAMS of Ukraine» was to study the correlation between skeletal muscles and vitamin D level in women of different ages.

**Methods:** The study involved 122 healthy women aged 20 to 83 years. According to the gerontological classification, the examined women were divided into groups: younger – up to 44 years (n = 35), middle – 45-59 years old (n = 26), older – 60-74 years (n = 44), senile age – 75-89 years (n = 17). Lean mass of the total body, upper and lower extremities was evaluated using Dual X-ray absorptiometry (Prodigy, GEHC Lunar, Madison, WI, USA). Strength of skeletal muscle was evaluated using springy carpal dynamometer. To determine the functional capacity of skeletal muscle we used a «four-meter» test. To determine the level of 25(OH)D electrochemiluminescent method was used with Elecsys 2010 analyzer (Roche Diagnostics, Germany).

**Results:** We determined a significant correlation between parameters of lean mass (r = 0.45; t = 2.08; p = 0.05) and the level of vitamin D in women of middle (45-59 years) age; skeletal muscle functionality (r = -0.51; t = -2.29; p = 0.04) and the level of vitamin D in women of older (60-74 years) age. We did not find the significant correlation between parameters of muscle strength and level of vitamin D.

**Conclusions:** Significant correlation between parameters of lean mass, skeletal muscle functionality and the level of vitamin D was determined in women of middle and older age.

## WCO02. PRELIMINARY RESULTS OF VITAMIN D BLOOD LEVELS IN A PORTUGUESE YOUNG ADULT POPULATION

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**Introduction:** The hormone "vitamin D" [25(OH)D] has been extensively studied worldwide lately, in order to try to define its adequate or inadequate blood levels and their eventual clinical significance. Although the skeletal consequences of the low levels are well known, the association with increased risk of cancer and cardiovascular diseases is far from clarified. It is known that vitamin D blood levels vary through life, but in Portugal the studies about it in different aged populations are scarce.

**Objectives:** To study the variation of vitamin D blood levels, through summer and winter and to relate it to biochemical and hormonal parameters, in a Portuguese young adult population.

**Methods:** In 268 healthy adults (190 women, 78 men), aged 18 to 35 years, fasting blood was taken to measure 25(OH)D, iPTH, calcium, phosphorus, liver and renal functions, TSH and other hormones, in summer 2014 and in the winter after. The hormones were analyzed by Liaison technology. To define abnormal 25(OH)D we used the "Endocrine Society 2011" criteria. Adequate statistical tests were used to describe the summer/winter groups and their differences. Statistical significance was considered for p < 0.05.

**Results:** The mean (± SD) 25(OH)D in the vitamin D groups and the n (%) in each group (table). Significant relations were found for