Osteoporosis

O-7
EPIDEMIOLOGY OF OSTEOPOROTIC HIP FRACTURES IN A REGIONAL HOSPITAL IN BURGOS, SPAIN

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Objectives: To describe the epidemiological characteristics of hip fractures in patients admitted in a regional hospital in Southern Burgos, Spain.

Material and method: Retrospective, observational study including all patients aged 45 years or more with acute hip fracture admitted to our hospital between January and December 2010. We excluded patients with pathological fractures (neoplasm, Paget´s disease, bone cyst etc) and also fractures due to a severe trauma (falls on the hip from more than standing height). Data collected included age, sex, place of residence (rural or urban area/home or elderly rehabilitation centers), type and side of fracture, previous hip fracture, earlier treatment with calcium/vitamin D supplements or anti-osteoporotic drugs, postsurgical complications and mortality. The source of information employed was that of the database of "Clinical Documentation and Admission Service", identified by codes 820.0 through 820.9 of the International Classification of Diseases ninth edition (ICI-9-CM).

Results: There were 63 cases reported of hip fractures (12 men -19.05%- and 51 women -80.95%-). Mean age was 84.70 (range 45-90). Most of them, 92.60% (n = 58), were residents of the rural areas. A total of 45 hip fractures (71.43%) lived at home, and 18 (28.57%), in a nursing home. Place of fall was also at home in 45 cases (71.43%). A previous fracture was reported in 9 subjects (14.29%). Only 6 patients were taking calcium and/or vitamin D supplements (50% both calcium and vitamin D), and 2 received bisphosphonates (risendronate) before fracture. There were no significant differences with respect on the type of hip fracture (50.79% trochanteric fractures and 49.21% cervical ones). Fractures was on the left side in 52.38% of the cases (n = 33). Surgical repair or replacement was required in most cases (46.03% osteosynthesis and 44.44% prosthesis). Postoperative complications were observed in 28 patients (44.44%), most frequent were: urinary infection, acute renal insufficiency, delirium, adynamic ileus and cardiac failure. Overall and perioperative mortality (within the first month after discharge) was 25.40% and 12.50%, respectively.

Discussion: The present review showed a higher incidence of hip fracture in elderly patients (mean age 84), most of them living in rural areas (home or nursing home), who felt at home. The female-male ratio was 4.2. Only a few subjects received calcium/vitamin D supplements or an anti-osteoporotic drug before the event. No significant differences were observed related to the type of fracture (trochanteric or cervical). Most of patients required a surgical treatment (mainly osteosynthesis or prosthesis) and a high number of them suffered post-surgical complications such as infections, delirium, acute renal insufficiency and cardiac failure. Perioperative mortality was about 12%, increasing to 25% in terms of overall mortality.

Conclusions: The incidence of osteoporotic hip fractures increases exponentially with aging, being the most important of osteoporosis-related fractures in terms of death, functional dependence, and social cost. Estimation of risk of hip fracture, lifestyle interventions and properly drug therapies for the treatment and prevention of the osteoporosis, especially in elderly patients, may reduce these adverse outcomes.

O-10
RISK FACTORS FOR OSTEOPOROSIS AMONG PATIENTS WITH TYPE 1 AND TYPE 2 DIABETES

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Objectives: The prevalence of diabetes and osteoporosis are increasing in worldwide. The relationship between diabetes and osteoporosis is complex and, although it has been investigated extensively, the subject remains controversial The purpose of this study was to evaluate risk factors for osteoporosis among patients with type 1 and type 2 diabetes admitted to the National Institute of Diabetes, Nutrition and Metabolic Diseases, during January-December 2011.

Material and method: A retrospective study that evaluated 5,600 patients with diabetes. 171 of these patients have been diagnosed with osteoporosis. The diagnosis of diabetes was based on using ADA criteria/recommendations 2011 and diagnosis of osteoporosis was based on assessment of bone mineral density at the proximal femur by dual energy X-ray absorptiometry (DXA). The variables analyzed were sex, age, smoking, environment, alcohol consumption, history of fracture, menopause, BMI, HbA1c, treatment with oral antidiabetic medication or insulin, use of proton pump inhibitors (PPIs). The characteristics of cases with osteoporosis and controls were compared using the χ^2 test and the logistic regression method (Odds Ratio, OR) was used to determine osteoporosis risk.

Results: The average age for patients with diabetes and osteoporosis was 72.3 ± 7.8 years. Predictive factors of osteoporosis in multivariate analysis included female sex [odds ratio (OR) 7.1, 95% confidence interval (3.5-14.4), p = 0.0001], BMI less than 18.5 [OR 5.2 (1.02-1.1), p = 0.0017], age over 65 [OR 4.6 (2.3-8.1), p = 0.001], menopause [OR 4.4 (2.13-8.1), p = 0.0001], alcohol [OR 4.2 (1.8-9.5), p = 0.0001], smoking [OR 1.9 (1.01-3.8), p = 0.04], treatment with PPIs [OR 1.1 (1.01-1.8), p = 0.03].

Conclusions: In patients with diabetes who have positive risk factors for osteoporosis (female sex, BMI less than 18,5, age over 65, menopause, alcohol, smoking, treatment with PPIs), or in those who present with fractures, evaluation of bone density should be done and respective preventive or therapeutic interventions should be applied.

O-11
VITAMIN D LEVELS IN NEWLY DIAGNOSED BREAST CANCER WOMEN

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Objectives: Low levels of vitamin D have been related with carcinogenesis in cohorts like NHS (Nurses' Health Study) and WHS (Women's Health Study). Though several studies have found low 25OH vitamin D levels in newly diagnosed breast cancer women, a recent meta-analysis did not confirmed this inverse association between breast cancer and low 25(OH)D levels years before diagnosis. On the other hand, it has been described high incidence of vitamin D insufficiency at the end of neoadjuvant chemotherapy with anthracyclines-taxanes. We studied vitamin D levels from a group of patients newly diagnosed of breast cancer, before they received any cancer treatment and after chemotherapy.

Material and method: We determined vitamin D levels (1.25OH D3 and 25OH D3, ng/mL) from a group of 168 women diagnosed of non advanced breast cancer, before they received any treatment excepting surgery. We compare them with a control group of 55 women without cancer (matched by age). Then, we compared vitamin D levels in women before treatment, immediately after chemotherapy and 12 months after diagnosis.

Results: Women were 55 ± 12 years old. Patients and controls had not differences on postmenopausal status (62% vs 58%; p = NS), previous osteoporosis diagnosis (4.3% vs 1.8%; p = NS) or fractures history (14.6% vs 12.7%; p = NS). Patients had greater BMI (28.3 ± 5 vs 26.3 ± 3; p = 0.001) and were more sedentary (71.7% vs 52.7%). 71.4% of the women had normal vitamin D levels (at least 30 ng/mL), 20.5% had sufficient levels, 7.1% had insufficient levels and 0.9% deficient levels. There were not significant differences between patients and control for basal levels of 1.25OH D3 (38.4 ± 18.8 vs 48.9 ± 23.3; p = NS) or 25OHD3 (39.1 ± 14.8 vs 44.4 ± 15.5; p = NS). There were not significant differences between basal levels and those determined after chemotherapy for 1.25OH D3 (53 ± 2.8 vs 31.5 ± 27.5; p = NS) or 25OH D3 (28.4 ± 13.5 vs 36.6 ± 15.1; p = NS), neither between basal levels and those determined one year after diagnosis for 1.25OHD3 (46.5 ± 6.4 vs 21 ± 2.8; p = NS) or 25OHD3 (36.5 ± 11 vs 39.9 ± 14.9; p = NS).

Discussion: More than 70% of the breast cancer patients had normal vitamin D levels before treatment, without differences with controls. These results contrast with previous studies but are in the line of the meta-analysis. Perhaps these patients had higher levels than other who live in different latitudes because of more sun exposition hours. Besides, vitamin D levels did not significantly changed over time (diagnosis, after chemotherapy and one year after treatment), in contraposition with the previous study commented. So, further studies are needed to clarify the relationship between vitamin D levels and breast cancer, and the influence of chemotherapy.

Conclusions: The majority of the newly diagnosed breast cancer women had normal vitamin D levels before treatment, and these levels did not changed after chemotherapy or 12 months later.

O-12
VITAMIN D LEVELS IN WOMEN WITH BREAST CANCER AND AROMATASE INHIBITORS (AI)

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Objectives: Frequently, breast cancer patients have low bone mass before they begin aromatase inhibitors treatment. Recent studies have found that these women also have low levels of vitamin D before starting AI therapy, and these low levels continue after initiating them. Treatment with calcium and 25OHD protected against bone loss in those women. We studied vitamin D levels before and after IA treatment in a group of breast cancer women.

Material and method: We determined vitamin D levels (1.25OH D3 and 25OH D3, ng/mL) from a group of 122 breast cancer patients before initiating AI treatment (AI were prescribed with standard clinical criteria). After initiating AI all women were treated with calcium and at least 800 UI/day of vitamin D. Analysis were repeated after 12 and 24 months of treatment.

Results: Patients were 62.6 ± 9 years old and their BMI was 30 ± 5. Only 44.6% of the women consumed at least 3 dairy products and 86.1% were sedentary. 11.5% referred some fracture history. All women had been operated. 84.3% of them were treated with radiotherapy, 48.4% with chemotherapy and 33.6% had received previous tamoxifen. At the moment of initiating AI, 37.7% had normal bone mass, 45.1% had osteopenia and 17.2% osteoporosis. Basal 1.25OHD levels were 45.9 ± 13 and 25OHD levels 46.5 ± 18. 1.25OHD was under 30 ng/mL only in 9.8% of the cases and 25OHD in 14%. There were not significant differences between basal 1.25OHD levels from osteoporotic women and those of normal BMD patients (47.9 ± 14 vs 51.1 ± 13; p = NS), though basal 25OHD levels tended to be lower in osteoporotic women (48.2 ± 17 vs 40 ± 14; p = 0.06).

Basal 1.25OHD levels tended to be lower in osteopenic women than in normal BMD ones (42.5 ± 12 vs 47.9 ± 14; p = 0.058), but there were not significant differences for basal 25OHD levels (47.3 ± 20 vs 48.2 ± 17; p = NS). Curiously, basal 1.25OHD levels were lower in osteopenic women than in osteoporotic ones (42.5 ± 12 vs 51.1 ± 13; p = 0.023), without differences for 25OHD levels (47.3 ± 20 vs 40 ± 14; p = NS). After a year of treatment with AI, basal 1.25OHD levels did not changed (46.5 ± 15 vs 47.1 ± 13; p = NS), though basal 25OHD levels tended to increased (47 ± 18 vs 51.3 ± 17; p = 0.059). At this time, 1.25 OHD was under 30 mg/mL in 2.7% and 25OHD in 12.8% of the women. After two years of treatment, basal 1.25OHD (44.7 ± 20 vs 44.4 ± 5; p = NS) and 25OHD levels (52.2 ± 20 vs 52.6 ± 26; p = NS) did not changed. Then, all women had normal 1.25OHD levels and 15.4% had 1.25OHD levels under 30 mg/mL.

Discussion: Despite more than 60% of the patients in this study had osteopenia or osteoporosis before initiating AI therapy, and less than 50% consumed enough dairy products, vitamin D levels were above 30 ng/mL in 85-90% of the women, without relevant differences between osteoporotic, osteopenic and normal BMD patients. After 12 and 24 months of treatment levels did not significantly changed. Perhaps the latitude (sun exposition) could explain the difference with other studies.

Conclusions: Most of the women with breast cancer who initiate AI therapy had normal vitamin D levels, perhaps because of the sun exposition.

O-13
VITAMIN D LEVELS IN HIP FRACTURE PATIENS AND RELATION WITH MORTALITY

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Objectives: Patients with hip fracture have high mortality rates (near 30% one year after the fracture). Hypovitaminosis D is frequent in these patients: a study found that 55% of hip fracture patients had 25OHD levels < 30 ng/ml at Spain. On the other hand, low levels of vitamin D have been related with mortality in general population, and calcium/vitamin D supplements have shown to reduce mortality in the elderly. We determine vitamin D levels in a group of women with hip fracture and studied their relation with mortality.

Material and method: We determine basal vitamin D levels (25OHD, ng/ml) from 100 women (at least 60 years old) that were admitted to our hospital after an osteoporotic hip fracture (low intensity traumatism) in order to perform surgery. We registered age, BMI, origin (home or institution), consume of dairy products or calcium/vitamin D supplements, and measured the contralateral hip BMD (g/cm2). All patients were prescribed calcium, vitamin D and a bisphosphonate, when possible. We registered mortality at hospital and after 6 months of monitoring, and looked for related variables.

Results: Patients were 80.1 ± 7 years old and 95% lived at their home. Only 25% of the women used at least 3 dairy products. BMI was 24.9 ± 4 (11% of the patients had BMI under 20). 61.9% were osteoporotic and 38.1% osteopenic. 25OHD levels were 34.6 ± 15 (55% of the patients had normal vitamin D levels: > 30 ng/ml). 18% of the women had died after 6 months. Women who died were older (85.3 ± 8 vs 78.9 ± 8, p = 0.006) and they consumed less dairy products (less than 3 dairy products 17% vs at least 3 dairy products 1%; p = 0.038), but these variables were not independently associated with mortality. BMI and calcium/vitamin D supplements were not related with mortality. There were not significant differences in basal levels of 25OHD between patients that died and those who survived (32.2 ± 8 vs 35.1 ± 16; p = NS), neither for mortality between women with normal vitamin D levels and those with low levels (11% of the women with vitamin D > 30 ng/ml versus 7% of the women with lower levels; p = NS).

Discussion: Hip fracture patients in this study consumed few dairy products and 11% of them had BMI under 20. All of them were osteoporotic or osteopenic. 45% of the women had low vitamin D levels (a similar percentage was described for general Spanish population). After 6 months 18 patients had died. These women consumed less dairy products, but there were not differences for BMI, calcium/vitamin D supplements or levels of 25OHD.

Conclusions: In our study, 45% of the fractured women had low vitamin D levels, but we did not found a relation with mortality.

O-17
IS OSTEOPOROSIS A INVISIBLE DISEASE IN INTERNAL MEDICINE DEPARTMENTS?

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Objectives: To study the incidence of osteoporosis in patients admitted to Internal Medicine, determinate the proportion of patients diagnosed and well treated, measure the risk of fracture in Internal Medicine by applying the FRAX calculation tool and study levels of Vitamin D.

Material and method: We performed a prospective and descriptive study, making the review of 195 patients admitted to internal medicine during the month of April 2012 through the use of electronic medical records. Data collection consisted in filiation, clinical risk factors for osteoporosis, comorbidities, radiology, laboratory data and treatment.

Results: The mean age was 80.33 years old (SD 12.47). 51.8% (101) were male. El IMC medio fue 27.6 Kg/m^2 (SD 6,18). Comorbidities were distributed in: alcohol 21 (10.8%), smoking 17 (8,7%), chronic obstructive pulmonary disease 49 (25.1%), ischemic heart disease 41 (21%), heart failure 69 (35.4), cerebrovascular disease 40 (20.5%), dementia 61 (31.3%), dyslipemia 63 (31, 3%), Parkinson 9 (4.6%), neoplasia 41 (21%), venous tromboembolism 17 (8.7%), diabetes mellitus 255 (28.2%), hypertension 121 (62.1%), renal dysfunction 69 (35.4%). Risk factors analyzed were: menopause < 45 years 4 (2.1%), rheumatoid arthritis, 8 (4.1%), hyperthyroidism, 9 (4.6%), hypothyroidism 14 (7.2%), hyperparathyroidism 4 (2.1%), hypogonadism, 6 (3.1%), malnutrition, 24 (12.3%), malabsorption 18 (9.2%), hepatopathy 18 (9.2%), diabetes mellitus type 1 0 (0%), urolithiasis 15 (7.7%), cataract 45 (23.1%). The most important drugs for our work were: steroids 12 (6.2%), beta-blockers 24 (12.3%), anticonvulsants, 6 (3.1%), anticoagulants 39 (20%), thyroid hormones 11 (5.6%), hypnotics/

benzodiazepines 71 (36.4%), opiates 25 (14.7%), statins 58 (29.7%), proton pump inhibitors 88 (45.1%), antidepressants 29 (14.9%). 2 patients (1.9%) had family history of hip fracture, previous diagnosis of osteoporosis 25 (12.8%) and prior treatment 11 patients. The average Spanish FRAX for major fracture and hip fracture was 10.54% (SD 8.7) and 5.39% (SD 5.5) respectively. The average UK FRAX for major fracture and hip fracture was 14.84% (SD 10.8) and 7.63% (SD7, 1) respectively. Vitamin D was determined in 52 patients with a mean value 16 (SD 12.4).

Discussion: The prevalence of osteoporosis is similar to other common diseases in Internal Medicine, however it is less diagnosed. Patients admitted in Internal Medicine departments have many comorbilities and risk factors of osteoporosis. Moreover, usually these patients take many medicines in relation with this disease. Vitamin D 25OH levels are low in over 80% of patients.

Conclusions: Osteoporosis is a prevalent disease in patients of Internal Medicine, underdiagnosed and undertreated. Risk factors for fracture aren't frequently valued.

O-18
VITAMIN D AND BONE MASS LOSS IN PATIENTS WITH CHRONIC CORTICOESTEROID TREATMENT

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Objectives: Osteoporosis is the most common complication of chronic treatment with glucocorticoids (GC), appearing fractures in nearly half of the patients. The vitD is essential in bone homeostasis. Although it is recommended to maintain levels above 30 ng/mL, there is no evidence that this is accompanied by less loss of bone mass (BM). Our objective was to analyze whether maintaining adequate levels of VitD is correlated with a lower percentage of loss of BM.

Material and method: We established the initial MO (HOLOGIC QDR4000) and after one year of treatment, and VitD levels were measured in summer and winter, using the mean as reference value. It was considered suboptimal if VitD level < 30 ng/mL and severe deficiency if < 15 ng/mL.

Results: We analyzed a total of 141 patients (76.6% female), mean age 56 ± 15 years; half prednisone dosage 5.19 ± 3.5 mg/day. The table lists the concomitant treatments received s.

Conclusions: Half of our patients had vit D levels below 30 ng/mL and found no significant association with higher percentage of bone loss. We only observed a higher percentage of bone loss in CF in patients with vitamin D levels below 15 ng/mL next to statistical significance but, generally, no differences were found between lower levels of VitD and the percentage of bone mass loss.

O-20
OSTEOPOROSIS AND ITS TREATMENT. OUR EXPERIENCE

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Objectives: Osteoporosis is a very prevalent disease in developed countries. It is caused by the cumulative effect of bone resorption in excess of bone formation. It affects mainly to postmenopausal women. Drug therapy should be considered in high risk postmenopausal women with T-scores between -1.0 and -2.5, with particular attention in women with a recent fracture, including hip fracture, because they are at high risk for a second fracture. There are several drugs, but to present day there are not studies comparing the efficacy and security between the different therapies. The aim of our study is to make a first approach in comparing the different therapy strategies in osteoporosis treatment in postmenopausal women.

Material and method: We have selected 24 postmenopausal women from an Osteoporosis practice in our hospital (H.G.U. Gregorio Marañón). We classified them in 3 groups: 9 receive therapy with PTH 1-84, 9 with oral bisphosphonates (BF vo) and 5 with intravenous bisphosphonates (BF iv). We followed them during one year. We compared basal characteristics: serum calcium, phosphate, PTH and vitamin D and femoral and vertebral densitometry (DMOF and DMOL, respectively) with the same parameters after one year of each treatment. We also compared previous fractures and its localization with fractures after treatment. We use the PSW 18 statistic program.

Results: The mean age was 71.3 years old. There were no statistical differences between basal characteristics. The mean DMOF was -2.8, and DMOL -2.9. The mean number of fractures was 1.23, and 66.6% were vertebral fractures. We found statistical differences in increasing the DMOL between PTH and BF iv ($p = 0.12$), and between BF o and BF iv ($p = 0.03$). In both cases BF iv was least effective than the comparative treatment. There were no differences between PTH and BF o. Only one patient had a new vertebral fracture during the study. We did not register any adverse effect.

Discussion: Even although our study has a small sample we found differences in favour of BF o and PTH in contrast with BF iv, so probably bigger studies will be able to detect more differences between treatments. In addition, we register no new fractures which are a very important part of the treatment. This is concordant with previous studies.

Conclusions: More studies are needed between therapies in order to find the most cost-effectiveness treatment for our patients, due to the fact that the Osteoporosis is a high prevalent disease nowadays, which causes important morbidity, and that previous studies are only made in comparison with placebo.

O-21
VITAMIN D AND OSTEOPOROSIS IN SYSTEMIC LUPUS ERITEMATOUS (SLE) PATIENTS

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Objectives: SLE patients have experienced an increase in life expectancy. It´s necessary to control long term conditions such as osteoporosis in order to improve quality of life in these patients. Lupus patients have higher prevalence of osteoporosis than general population. Obviously because LES patients have more risk factors, but that it's not only the cause. Vitamin D levels are diminished in this population. The aim of the study is to determine the frequency of osteoporosis and levels of vitamin D in lupus population.

Material and method: We undertake a cross-sectional descriptive study in a group of SLE patients. We collected demographic and clinical data from medical records. Vitamin D serum levels were determined. Bone Mineral Density (BMD) was determined by densitometry DXA (Dual X-ray absorptiometry). Statistical analysis was performed using SPSS 15.0.

Results: We studied 63 patients (55 women, 87.3%) with an average age of 44 years. Demographic and clinical characteristic are shown in Table 1. In our study 88.9% of the patients showed sub-optimal levels of vitamin D (< 30 ng/ml). Moreover, deficient 25-OH-vitamin D (< 15 ng/mL) were found in 47.6% of the patients in our group. Despite the fact, 65.1% of the patients were treated with calcium and vitamin D and 27% with antiresorptive drugs. Vitamin D levels did not correlate significantly with the use of steroids or SLEDAI. Moreover, 14.3% had osteoporosis and 27% osteopenia. There was no significant relationship between osteoporosis/osteopenia and consumption of drugs such as corticosteroids, immunosuppressants or cyclophosphamide.

Discussion: Several cross-sectional studies have evaluated BMD and prevalence of osteoporosis in SLE patients. The majority of them showed that these patients have lower BMD than general population, and a wide range of prevalence of osteoporosis: between 3% and 43%. In our study, 14.3% of patients had osteoporosis. Osteoporosis related to steroid consumption has been widely studied; In this regard, authors find discrepancies in SLE patients. Not always an association between corticosteroid consumption and osteoporosis prevalence has been described. On the other hand, there is growing evidence of hypovitaminosis D in lupus patients. This may be caused by a lower sun exposure, due to photosensitivity or secondary to lupus nephritis. However, it is possible that other factors related to disease may affect vitamin D serum levels and prevalence of osteoporosis in SLE patients.

Conclusions: SLE patients showed a higher prevalence of vitamin D deficiency and osteoporosis than general population. This may be related to the presence of classic risk factors, but also by other factors related to the characteristics of the disease. However, it is necessary to undertake prospective studies with a greater number of patients to clarify this situation.

Table 1 (O-21). Demographic and clinical characteristics

Variable	Median ± SD/n (%)
Sex (Female/Male)	55/8 (87.3/12.7)
Smoking(Yes/No)	18/45 (28.6/71.4)
BMI (Kg/m^2)	