fracture in the normal population. The overall prevalence of identified risk factors was low but smoking and body weight are both modifiable thus health promotion messages should aim to target these risk factors.

SAT0175 EFFECTS OF COMBINED TREATMENT ALENDRONATE + ALFACALCIDOL ON BONE MINERAL DENSITY IN POSTMENOPAUSAL OSTEOPOROSIS

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Background

Objectives The purpose of this study was to evaluate the effect of four different treatment modalities on bone mineral density (BMD) in postmenopausal osteoporosis.

Methods 170 postmenopausal women BMD (measured by dual energy X-Ray absorptiometry-DXA) T scores at least ≥ 2.5 SD below the peak young adult mean were included in the study. The patients were randomised to four groups. 40 patients were treated with alendronate (10 mg/daily) + alfacalcidol (0,5 µg/daily) and 40 patients were treated alendronate (10 mg/daily) and 60 patients were treated alfacalcidol (0,5 µg/daily) for two years. All patients received 500 mg/daily supplemental calcium to ensure adequate calcium intake. Only 500 mg of calcium were given to the control group of 30 patients. BMD was measured by total body dual-energy X-Ray absorptiometry (DPX-Lunar) in the lumbar spine and in proximal segments of the femur (neck, ward's triangle, trochanter, inter and total hip). BMD was evaluated at baseline and after 12 and 24 months. The patients followed up for two years.

Results After two years of treatment, we found significant increase of femoral neck, trochanter, ward's triangle and lumbar spine density in alendronate + alfacalcidol group and alone alendronate group ($p < 0.05$). Also, in the second year of treatment, the combination of alendronate + alfacalcidol showed BMD increases that were significantly higher than for alendronate ($p < 0.05$). In the alfacalcidol group, BMD no increased significantly ($p > 0.05$).

In the placebo group (only calcium 500 mg/daily), BMD decreased significantly ($p < 0.05$).

No adverse effect were observed during the two years of the study, in particular with respect to renal function and the gastrointestinal system.

Conclusion These results showed that combined treatment with alfacalcidol + alendronate was more effective than therapy with alendronate alone.

SAT0176 THYROID AND BONE METABOLISM

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Background Hyperthyroidism (HT) is a risk factor for osteoporosis (OP). It is still uncertain if bone mass and bone turnover are completely normalised after treatment of HT.

Objectives The aim of the present cross-sectional study was to investigate whether former hyperthyroid patients have an increased risk for OP due to reduced bone mass and/or persisting high bone remodelling activity after euthyroidism was restored.

Methods We studied 53 formerly hyperthyroid females (age 39 ± 13 years; 20 premenopausal (premw); 33 postmenopausal (posmw), who had been euthyroid for a mean period 129 ± 78 months. They were treated by combined medical therapy. We evaluated bone mineral density (BMD) with Lunar4500 DEXA and calcaneal quantitative ultrasound (QUS) parameters with Osteometer DTUone. Biochemical markers of bone turnover (serum osteocalcin (OC), beta-crosslaps (BCL) and urinary deoxypyridinoline (U-DPR) and cross-linked N-telopeptides of type I collagen (NTX), thyroid hormones and antithyroid antibodies (atb) were measured.

Results Considering DEXA parameters, in posmw, 18% had vertebral OP and 7% had hip OP. A higher prevalence of OP was detected by QUS evaluation: 39% BUA t-score < -2.5 sd and 42% SOSTscore < -2.5 sd. There were no cases of OP in premw. Abnormally high levels of U-NTX (35% premw, 61% posmw), U-DPR (26% premw, 15% posmw) and BCL (26% premw, 52% posmw) were found. Significant correlations were detected between U-NTX and TSH ($p < 0.05$, $r = -0.45$), U-NTX and free T3 in premw ($p < 0.05$, $r = 0.47$), BCL and antithyroid peroxidase atb ($p < 0.05$, $r = 0.56$), BCL and antithyroglobulin atb in posmw ($p = 0.001$, $r = 0.59$), OC and antithyroglobulin atb in posmw ($p = 0.001$, $r = 0.60$) and OC and antithyroid peroxidase atb in posmw ($p < 0.001$, $r = 0.64$). There was no correlation between these biomarkers and dose or duration of thyroxine replacement therapy.

Conclusion The prevalence of OP in former hyperthyroid women wasn't superior to the general population. There was no significant difference of BMD (Z -scores $< -2.5 = 0$), although these women presented increased bone resorption markers. The discrepancy between DEXA and QUS could reflect differences in "bone quality". Curiously, despite being euthyroid, the correlation between U-NTX and TSH could signify that TSH levels close to inferior limit of normality are associated with an increased bone turnover. There is also no explanation to the correlation between biomarkers and antithyroid atbs, but we can't exclude a possible role of this atbs in the production of BCL or OC.

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SAT0177 GENDER, AGE AND ANTHROPOMETRIC CORRELATIONS OF HIP AXIS LENGTH

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Background Hip axis length (HAL) has been proposed as an important risk factor for hip fracture, independent of bone mineral density. Significant differences of HAL have been demonstrated in relation to gender, age and ethnic origin. The latter

have been proposed to play a role in the different incidence of osteoporotic hip fractures among different countries.

Objectives Our objective consisted of studying the normal distribution of HAL in the Portuguese population and try to identify clinical parameters capable of predicting HAL, therefore reinforcing indication of bone densitometry.

Methods A randomly selected sample of 1705 inhabitants from the centre of Portugal, (474 males; 1231 females), aged 19 to 89 were included in the study. HAL was evaluated by DEXA (Hologic) using inbuilt software. Patients were asked and examined for age, present height and weight and at age 25, age at menarche and arm span. Following correlation studies, significant variables were included in stepwise regression analysis (SPSS).

Results HAL was significantly longer in males than in females ($12,44 \pm 0,69$ vs $10,84 \pm 0,69$; $p < 0.001$). In men, significant correlations ($p < 0.001$) were found between HAL and height at age 25 ($r:0.483$), weight at age 25 ($r:0.176$) and arm span ($r:0.0272$). Using stepwise regression only height at age 25 was retained as significant (Model $r: 0.490$; Adj. $R^2: 0.238 - p < 0.001$). In women, age ($r: 0,06$), height at 25 ($0,304$), present height ($0,314$), weight at 25 ($0,214$), present weight ($0,058$) and arm span ($0,267$), all showed significant correlations. Stepwise regression showed significant contributions for armspan, height and weight at age 25. The best fitting model explained 16,5% of the variance. In our population no major difference in HAL has been observed between the young (20–30 years old) and the elderly (>70), the difference being less than 1%.

Conclusion Although HAL is correlated with height at age 25 for both sexes, and also with arm span and weight at age 25 in females, the percent variance explained by the best fitting model using these parameters is too small to allow for reasonable prediction and inherent implications.

SAT0178 VERTEBRAL DEFORMITIES IN 229 FEMALE RA PATIENTS ASSOCIATIONS WITH CLINICAL AND DEMOGRAPHICAL VARIABLES

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Background

Objectives To examine the frequency of vertebral deformities in a population based cohort of female rheumatoid arthritis (RA) patients, and their relationship with bone mineral density (BMD) and demographic and clinical variables.

Methods Lateral radiographs of the spine were obtained from 229 female RA patients born 1926 or later (mean age (SD) 63.4 (6.7) yrs, mean disease duration 16.8 (10.4) yrs), recruited from a population based county RA register. Demographic and clinical variables were collected according to standardised procedures. Vertebral deformities were measured using a standardised semi-quantitative method described by Genant, by an experienced radiologist (AH). Deformities were classified as mild, moderate or severe (a reduction in any of the vertebral heights of 20–25%, 25–40% and more than 40%, respectively). The patients underwent BMD measurements by DEXA of the femoral neck, total hip and lumbar spine (L2–L4) (Lunar Expert). T-scores were computed as provided from the manufacturer.

Results The total number of deformities was 168 (87 moderate or severe). Forty-nine (21.4%) of the patients had at least two mild deformities or one moderate/severe deformity. Mean BMD

(SD) for femoral neck was $0,806 \text{ gm/cm}^2$ (0.152), total hip 0.836 gm/cm^2 (0.158) and L2–L4 $1,053 \text{ gm/cm}^2$ (0.201). In bivariate analysis, vertebral deformities were associated with age, ESR, number of deformed joints, previous non-vertebral fracture, long-term corticosteroid use and with BMD at all three measurement sites ($p < 0.05$ for all variables). In logistic regression analysis, VD was independently associated with age, long-term corticosteroid use and with low bone mass at the hip.

Abstract SAT0178 Table 1

	β	SE	Odds ratio	Confidence interval
Age	0.16	0.04	1.17	1.08–1.28
Long-term corticosteroid use*	1.93	0.57	6.92	2.23–21.46
Previous non-vertebral fracture	1.34	0.46	3.82	1.55–9.41
Z-score ≤ -1 SD total hip	0.97	0.47	2.64	1.04–6.7

*12 months or more.

Conclusion This study indicates that several factors are independently related to vertebral deformities in RA, and should be considered when trying to identify patients with this complication. Physicians should probably be especially aware of vertebral deformities in patients with a history of non-vertebral fractures and long-term corticosteroid use.

SAT0179 BACK PAIN AND DISABILITY BEFORE, AND AFTER, CLINICALLY-DIAGNOSED VERTEBRAL FRACTURES

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Background Painful vertebral fractures that come to medical attention (CVFx) comprise less than a third of all new vertebral deformities (VDef), yet account for a large proportion of the pain and disability due to vertebral osteoporosis. Little is known about the natural history of back pain and related disability before and after a CVFx.

Objectives We compared prefracture levels of back pain and back disability in women who subsequently experienced a CVFx to levels of back pain and disability in women who did not have a CVFx, and examined the duration of increased back pain and disability for 12 months following a CVFx.

Methods We studied 6,459 women in the Fracture Intervention Trial, aged 55–80 with femoral neck BMD T-score < -1.6 . 33% had a baseline VDef. CVFx were self-reported community-diagnosed spine fractures confirmed by central comparison of the diagnostic spine films with the study baseline spine films. Back pain and back-related disability (score 0–20) in the past 4 weeks and number of days back disability (bedrest + limited activity) in the previous 12 months were assessed at baseline (prefracture) using validated instruments. Number of days of severe back pain and disability due to back pain were evaluated for successive 3 month intervals before, and after, a CVFx. Baseline and new VDef during 3 to 4.5 yrs of follow-up were assessed with morphometry.

Results Women who had a single new CVFx ≥ 6 months after baseline had greater baseline disability than women who had neither a CVFx nor a VDef during FU, adjusting for age, number of baseline VDef, spine BMD, prior Dx of spine