Methods: We studied 80 women (age range 52–71 years) with postmenopausal osteoporosis; we examined on the same day both lumbar and femoral BMD at baseline and after 12 and 24 months of regular treatment with various drugs (raloxifen, clodronate, calcium plus vitamin D) affecting phosphocalcium metabolism.

Results: After 24 months of treatment, we observed a mean increase of 1.61% of lumbar BMD vs baseline (p < 0.005), while femoral BMD did not show any significant increase vs basal values. The results obtained (which were expressed as rate of change for year of treatment from baseline, both in terms of absolute and percentage values) at lumbar level and at femoral subregions (neck, trochanter, intertrocanteric region, total, Ward's triangle) level were correlated by using Pearson's r correlation coefficient. We observed the better correlation among the rate of change of lumbar BMD and the rate of change of femoral BMD for total subregion (r = 0.299, p < 0.05 at 12 months, r = 0.36, p < 0.05 at 24 months), while Ward's triangle showed the worst correlation (p = n.s.). We observed highly statistically significant correlation between rate of change/year among the femoral subregions, mainly after 24 months of treatment in respect of after 12 months.

Conclusions: Our data suggest that pharmacologic treatment of osteoporosis can play a different role on BMD at lumbar and at femoral level; total BMD can be considered the best femoral site for DXA follow up and a duration of 24 months of treatment allows us a more omogeneous evaluation than 12 months about femoral BMD change.

P407MO. COMPARISON BETWEEN DUAL X-RAY ABSORPTIOMETRY AND QUANTITATIVE ULTRASOUND PARAMETERS IN DIFFERENT POPULATIONS

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Background: The quantitative ultrasound (QUS) is a new technique approach to assess both bone quality and density. The association between QUS and dual X-ray absorptiometry (DXA) is still controversial, such that it remains unclear whether a QUS measurement is simply a surrogate for bone densitometry, or whether the future of the technique depends on this ability to provide structural information or enhanced fracture prediction.

Objective: The aim of this study was to evaluate the correlation, agreement, sensitivity and specificity between DXA and QUS parameters in healthy women and in patients with diseases that interfere with bone metabolism.

Methods: Calcaneal QUS parameters (Osteometer DTUone) and DXA (LUNAR Expert 1320) at the lumbar spine and proximal femur were measured in 184 healthy women randomly selected from community and seven different pathological groups selected from hospital outpatient clinical routine (50 rheumatoid arthritis, 63 SLE, 57 former hyperthyroid patients, 42 asthmatics, 11 cardiac transplants and 24 hepatic transplants).

Results: In healthy controls the correlation between QUS and DXA was statistically significant for all evaluated parameters and ranged from 0.33 to 0.55, p < 0,001. In the pathological groups evaluated, the correlation remained similar and statistically significant. The agreement between QUS and DXA in healthy controls was strong and statistically significant, particularly at the lumbar spine (K agreement ranged 0,90 to 0,97), and the sensitivity and specificity between the QUS measurements and DXA, at the femur and lumbar spine, were close to 100%. Only in the former hyperthyroid patients, the agreement between QUS and DXA was poor (K agreement ranged 0,18 to 0,56).

Conclusions: QUS and DXA measurements were well correlated in all different groups. We conclude that QUS was a reasonable method to differentiate between osteoporosis and non-osteoporosis when we take DEXA as a gold standard.

P408SA. REGIONAL STRUCTURAL SKELETAL DISCORDANCE ASSESSED BY MEASURES OF COMPLEXITY

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Aims: The aim of the study was to compare the structural composition of trabecular bone as well as of the whole bone at six different skeletal regions. The bones' composition was evaluated by measures of complexity.

Methods: Bone specimens of thirty human cadavers were examined. The distal radius, the proximal tibia, the vertebral body L3, the femoral neck, the calcaneus, and the midshaft of the humerus were scanned in high resolution mode (20 x 20 micro-m) in 1 mm slice thickness on a XCT-2000 scanner (Stratec, Germany). The acquired images were numerically segmented into trabecular and cortical bone areas using previously described preprocessing techniques. Symbolic dynamics were applied to the images in order to receive simplified and easy to analyze symbol-encoded images. After this image-processing procedure, the segmented data sets were evaluated by five different measures of complexity. The BMD was measured as well.

Results: The numerical architectural complexity at each skeletal region is different. Although there is a interpersonal variation affecting all skeletal regions, the variation from region to region is greater. The highest interpersonal variation was found in the calcaneus.

Conclusions: The discordance of architectural composition at different skeletal regions can be accurately calculated by measures of complexity. The architectural composition of bones depends among other factors on genetic programming as well as on biomechanical load conditions. Despite of the regional discordance, the bone structure at all six skeletal regions follows the same general rule: Loss of bone density occurs simultaneously with a rapid decreasing structural complexity. This transition is accompanied by an increased degree of disorder within the bone architecture at intermediate bone densities. The high interpersonal variation of structure within the calcaneus is evidence of the difficulties to standardize quantitative measurements at this skeletal site.

P409SU. BONE DENSITY OF THE SPINE AND FEMUR IN ARABIAN WOMEN: RELATION TO QUANTITATIVE ULTRASOUND OF THE CALCANEUS AND VITAMIN D STATUS

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Aims: Quantitative ultrasound (QUS) of the calcaneus is frequently used to screen for osteoporosis. This technique correlates well with axial dual-energy x-ray absorptiometry (DXA) and predicts fracture risk in older women. The correlation between QUS and DXA in women with vitamin D deficiency however is not known. We assessed the correlation between both techniques in 55