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Low Performance of Circulating RANKL to Identify Postmenopausal Women with Osteoporosis and Pre-existing Vertebral Fractures. P. Mezquita-Raya*[1], M. de la Higuera*[1], D. Fernandez*[1], G. Alonso*[1], M. Ruiz-Requena*[2], F. Escobar-Jimenez[1], M. Muñoz-Torres[1]. [1]Bone Metabolic Unit. Department of Endocrinology, University Hospital San Cecilio, Granada, Spain, [2]Biochemistry Division, University Hospital San Cecilio, Granada, Spain.

Regulation of osteoclastic activity is critical for understanding bone loss associated with the postmenopausal period. In vitro and animal studies have revealed the role of RANKL on the differentiation and activation of osteoclasts. However, the relationship between serum concentrations of RANKL and bone mass is uncertain, with different studies yielding different results. AIMS: To examine the relationship among circulating levels of RANKL, bone mineral density (BMD) and vertebral fractures in healthy postmenopausal women. SUBJECTS AND METHODS: We determined anthropometric parameters, serum RANKL (Biomedica Gruppe, Vienna, Austria), BMD by dual X ray absorptiometry at lumbar spine and femoral neck (Hologic QDR4500, Waltham, MA), and pre-existing vertebral fractures in 206 ambulatory postmenopausal women. RESULTS: The mean circulating RANKL levels was 3.9±10.7 pg/ml. Serum RANKL concentrations were undetectable in a high percentage of women (n=113, 54,9%). There were no significant differences in clinical variables or prevalent vertebral fractures among women with detectable vs. undetectable RANKL. RANKL were not correlated to clinical variables or BMD. The percentage of women with detectable circulating RANKL was significantly different according to bone status (osteoporosis: 54%, osteopenic 25%; normal bone mass: 14%; p=0.029). However, the association between RANKL and BMD was lost in the multivariate analysis. CONCLUSION: These preliminary results indicate that serum RANKL measurement is of limited practical value at present in the study of bone metabolism.

Disclosures: ***P. Mezquita-Raya****, Eli Lilly & Co (Spain) 2; Fondo de Investigación Sanitaria (FIS: PI02/1089) 2.*

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Serum Gla-type Osteocalcin, Osteoprotegerin, and Urinary Cross-linked N-telopeptide as Markers in Glucocorticoid-Induced Osteoporosis. I. Tanaka, H. Oshima. Department of Laboratory Medicine, Fujita Health University School of Medicine, Toyoake, Japan.

[Objective] Glucocorticoid-induced osteoporosis (GIO) has been increasingly paied attension as a secondary osteoporosis, but valuable markers for outcome such as bone mineral densities and incidental fractures in GIO have not yet available. In this study, we try to clarify a clinical role of serum Gla-type osteocalcin (GlaOC), serum osteoprotegerin (OPG), and urinary Cross-linked N-telopeptide (NTX) levels in GIO.[Subjects & Methods] One hundred patients (75 females and 25 males) with connective tissue diseases under glucocorticoid therapy were enrolled in this study. The mean of age, daily glucocorticoid dosage (prednisolone equivalent), and total glucocorticoid dosage were 46 years old, 19 mg/day, and 7.9 g, respectively. Serum OPG, urinary NTX and serum GlaOC were measured by ELISA, respectively. [Results] 1) Among patients who started to take glucocorticoids (an average dosage of 37 mg/day) but not anti-osteoporosis agents, OPG levels decreased after four weeks significantly (from 3.7+/-1.2 to 2.6+/-1.1 pmol/ml,p<0.05). Anti-osteoporotic agents did not change this decrease. NTX values increased after four weeks (an average of 158% of pre-value, p<0.02). On the other hand, there was no significant change in GlaOC levels. 2) A significant positive correlation was found between OPG and NTX (p< 0.01) before the start of glucocorticoid treatment. In patients under glucocorticoids, however, there was no correlation between these markers. 3) OPG was positively correlated with a change in bone mineral densities of the lumbar spine after 1 year (p<0.02). 4) Among patients (n=12) treated with menatetrenone, a vitamin K analog, GlaOC showed higher values (15.5+/-3.1ng/ml) in 3 cases who had new vertebral fractures in the following 2 years than in 9 cases (7.0+/-4.1) having no fracture in thatpriod (p<0.03).[Conclusion] These results suggest that 1) bone absorption is increased, at least in part, with suppression of OPG by glucocorticoids in the early stage of glucocorticoid treatment, 2) serum OPG level is a predictive marker of change in bone mineral densities, and 3) menatetrenone effectively prevents vertebral fractures in patients with low serum GlaOC values.

Disclosures: ***I. Tanaka****, None.*

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Gender and Age Related Changes in Calcaneal Speed of Sound (SOS) in 9,146 Japanese Pediatric Population. T. Yamamoto[1], K. Mimura*[2], H. Morii[3], K. Yoh[4], K. Nonaka*[5], T. Arai*[6]. [1]Pediatrics, Minoh City Hospital, Minoh, Japan, [2]Department of Physical Education, Osaka University of Education, Kashihara, Japan, [3]Emeritus Professor, Osaka City University, Osaka, Japan, [4]Orthopedic Surgery, Hyogo College of Medicine, Nishinomiya, Japan, [5]Department of Health Care, Elk Corporation, Tokyo, Japan, [6]Department of Development, Furuno Electric Co., Ltd., Nishinomiya, Japan.

It seems that the maximum bone quantity in young people will influence a future osteoporosis in the aged. To prevent osteoporosis, it is important for assessment of bone quantity in young people. Previous study was reported to measure calcaneal speed of sound SOS in the elementary school children by using special foot adapter to give more reliable results in ASBMR 2003 by us. The purpose of this study was to assess gender and age related changes for right calcaneal SOS in Japanese pediatric population by using quantitative ultrasound (QUS). A total of 9,146 Japanese children and adolescents (4,352 females and 4,794 males, age range: 6-20 years) at 6 elementary schools, 7 junior high schools, 4 high schools and 4 colleges in 6 provinces from various parts of Japan were , after signing an informed consent, assessed by using QUS device (CM-100, Furuno Electric,Co., Ltd., Japan). To minimize impact of skin temperature, all the measurements in this study were performed in the period during July to October closing to summer season in Japan by the exclusive operators. The age related changes in male: the SOS value increased with age from 12 to 18 years old and showed a peak at age 18. Then it decreased gradually. In contrast, the age changes in female: the SOS values increased with age 12 to 14 years old and showed a peak at age 14. The peak value remained in a plateau until age 18, and then decrease gradually. The SOS value in female was higher than that in male until 16 years old. A significant difference was found between male and female aged 13 and 14. However, the SOS value was becoming similar value in male and female aged 17 to 20. These differences are probably attributed to a different pubertal development.
A detailed reference database for SOS at the calcaneus in Japanese children and adolescents were established. The CM-100 is a useful tool for assessment of pediatric bone quantity.

Disclosures: ***T. Yamamoto****, None.*

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Inhaled Steroids do not Produce Bone Mass Loss in Asmathic Women. M. Sosa[1], P. Saavedra*[2], and The GIUMO Study Group*[3]. [1]Medicine, University of Las Palmas de Gran Canaria, Las Palmas de Gran Canaria, Spain, [2]Mathematics, University of Las Palmas de Gran Canaria, Las Palmas de Gran Canaria, Spain, [3]Medicine, Multicentre Cooperative, Study Group, Spain.

Background: Systemic corticosteroid therapy leads to bone loss and increases fracture risk especially with high doses and prolonged use. However it is unclear to what extent inhaled corticosteroids produce detrimental effects on bone mineral metabolism.
Main objective: To study the effect of inhaled steroids on bone mineral density measured by quantitative ultrasound at the heel. To assess the possible influence of menopause as an etiological cofactor on bone mineral loss
Secondary objectives: To study the influence of inhaled steroids on bone mineral density measured by dual X-ray absorptiometry (DXA) at the lumbar spine and the proximal hip.
Subjects and Methods: Cross-sectional study performed on pre and postmenopausal Caucasian women. Group I (patients with oral steroids) was composed by 176 women suffering from asthma and using inhaled steroids for years. They did not use oral steroids. Group II (controls) was composed by 197 women of similar age, height and weight who did not use inhaled steroids. Group III (asmathic) was composed by 72 patients, suffering from asthma and not using any kind of oral or inhaled steroids.
Results: Are shown in tables. We did not find statistical differences in QUS andDXA parameters between the groups.
Conclusions: The chronic use of inhaled steroid in asthmatic pre and postmenopausal Caucasian women, does not produce significative changes in BMD, measured either by QUS at the heel or by DXA at the lumbar spine or the proximal hip.

	Group I Asmathics with inhaled steroids	Group II. Controls	Group III. Asmathic with no steroids	p value
L2-L4 (g/cm^2)	0.936 ± 0.160	0.945 ± 0.152	0.985 ± 0.162	NS
Femoral neck (g/cm^2)	0.760 ± 0.135	0.753 ± 0.119	0.802 ± 0.127	NS
BUA (dB/MHz)	73.6 ± 18.3	69.0 ± 17.7	70.0 ± 15.1	0.03
SOS (m/sg)	1548 ± 31.7	1544 ± 33.3	1545 ± 24.5	NS
QUI	94.2 ± 21.1	90.5 ± 20.1	90.7 ± 15.5	NS

Disclosures: ***M. Sosa****, GIUMO group received an investigation grant from Italfármaco Laboratories. Spain. 2.*

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Radiographic Absorptiometry and Quantitative Ultrasound Techniques Are Associated with Vertebral Deformity, but Not with Prior Nonspine Fracture in Japanese Women. Y. Abe*, K. Aoyagi*. Department of Public Health, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki, Japan.

The purpose of this cross-sectional study was to evaluate the association of radiographic absorptiometry (RA) and quantitative ultrasound (QUS) with fractures among 586 Japanese women ages 40 to 89 years (mean age = 64.3, SD = 9.6 years). Bone measurements were performed using RA for metacarpal bone and QUS for calcaneus (stiffness index). Lateral spine radiographs were obtained and radiographic vertebral deformities were assessed by quantitative morphometry, defined as vertebral heights more than 3 SD below the normal mean. Information on previous nonspine fractures after age 45 (due to minor or moderate trauma) was obtained using a questionnaire. The associations of vertebral deformity, previous nonspine fracture, and any (spine or nonspine) fractures with bone measurements were examined using logistic regression analysis, adjusting for age. Both metacarpal bone mineral density (BMD) and stiffness index of calcaneus had significant associations with vertebral deformity. The age-adjusted odds ratio (per 1 SD decrease in bone mass) for vertebral deformity was 1.90 (95% confidence interval [CI]: 1.33-2.71) for metacarpal BMD and 4.03 (95% CI: 2.61-6.22) for stiffness index. However, neither metacarpal BMD nor stiffness index was significantly associated with nonspine fractures; the respective age-adjusted odds ratios were 1.41 (95% CI: 0.99-2.01) and 1.28 (95% CI: 0.89-1.84). Our results suggest that both RA and QUS are significantly associated with existing vertebral deformity, suggesting that peripheral low bone mass contributes to