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Subchondral Bone in Osteoarthritis
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Osteoarthritis (OA) is a long-term chronic disease that is characterized by the deterioration of cartilage in joints resulting in the articulation of bone with bone. A central role of the pathogenesis of OA is subchondral sclerosis that is associated with or even causes joint degeneration. Recent investigations showed that OA is associated with early bone loss due to increased bone remodelling. This is followed by slow turnover that leads to densification of the subchondral bone and complete loss of cartilage. Subchondral densification is a late event in OA that involves not only the subchondral plate and calcified cartilage. However the subchondral trabecular bone beneath the subchondral plate may remain osteopenic. In experimental studies, the inducement of subchondral sclerosis without the prior stage of increased bone remodelling did not cause progressive OA. Both, early-stage increased remodelling and bone loss and the late-stage slow remodelling and subchondral densification seem to be part of the process that leads to OA. Various clinical studies showed a beneficial effect of drugs that are used for osteoporosis treatment on the progress of OA. Further studies are needed to clarify the role of subchondral bone changes in respect to the pathogenesis of OA. With accumulation of this data potential new drugs might get developed that target subchondral bone for the treatment of OA.
Vitamin D status in IBD patients: a comparison of three different assays

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Objectives Vitamin D is a fat soluble secoosterol that is produced in the skin after sun exposure. Epidemiological studies show significant associations of vitamin D deficiency and immune mediated diseases. Plasma 25 (OH) vitamin D3 concentration is a reliable biomarker for vitamin D status but variability of assays makes adequate monitoring of vitamin D difficult.

Aim To determine the correlation between three different assays for measuring plasma concentration of 25 (OH) vitamin D3.

Methods Blood samples from 50 IBD patients were evaluated in a blinded way in three different laboratories using diverse assays of 25 (OH) vitamin D monitoring such as high-performance liquid chromatography (A), IDS-automated immunoassay (B) and competitive binding assay (C).

Results 25 (OH) vitamin D concentrations assessed by competitive binding assay were in the range of 3.0 ng/ml to 53.2 ng/ml and by automated immunoassay of 9.0 ng/ml to 48.0 ng/ml. All vitamin D assays showed a linear quantitative correlation (Pearson r = 0.69 for A vs. B, 0.69 for A vs. C and 0.63 for B vs. C). The agreement of 25 (OH) vitamin D assays in sorting patients into distinct 25 (OH) vitamin D categories varied from 60 % to 76 %.

Conclusion There is a significant bias between all three methods. The difference in 25 (OH) vitamin D assays has a significant impact on results, patient classification, and treatment recommendation. Our results indicate the need towards further standardizing assays for 25 (OH) vitamin D measurement.

Bone Metabolism after Bariatric Surgery

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Background The role of Sclerostin (Scl), as a key regulator of bone formation, after Roux-en-Y gastric bypass (RYGB) or laparoscopic sleeve gastrectomy (SG) is still unclear.

Objectives Evaluation of Sclerostin serum levels after surgery and correlations with bone turnover markers and areal bone mineral density (BMD) changes.

Study Design A prospective observational single-center two-arm study in premenopausal women with morbid adipositas over 24 months. Measures of BMD and lab values were taken prior to surgery and after 1, 3, 6, 9, 12, 18, and 24 months.

Results 52 premenopausal obese women after RYGB (40 ± 8 years, BMI 43.4) or SG (41 ± 7 years, BMI 45.7) completed the study. Scl increased by Δ = +50.5 % at 30 ± 5 days after surgery and remained elevated with a maximum of Δ +120 % six months after surgery. CTX rapidly and continuously increased by Δ = +170 % (peak month 9 Δ +190 %), PINP to lesser extent (peak Δ = +73 % at month 12) and steadily declined to a change of Δ = +36 % (P < 0.001 for all). Scl increases were significantly positively correlated with CTX and PINP increases and significantly negatively correlated with BMD loss. BMD independently declined regardless of RYGB and SG. Elevations of Scl, CTX, PINP, and phosphate (p < 0.001), but not iPTH, were significant discriminating factors for BMD loss (AUC 0.915).

Conclusion Rapid and sustained increase of Scl, CTX and to lesser extent PINP causes an uncoupling in bone metabolism and results in BMD loss at all skeletal sites.

Trabecular Bone Score in Clinical Practice

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Introduction Osteoporosis is considered as a disease primarily of women; however, around 25 % of the individuals with osteoporosis are men. BMD measurement by DXA is the gold standard used to diagnose osteoporosis and assess fracture risk. However, BMD does not take into account microarchitecture alterations. Trabecular Bone Score (TBS, Med-Imaps, France) is an index of bone microarchitectural texture extracted from posterior-anterior spine DXA.

The aim of this study was to assess the role of TBS in clinical practice.

Materials and Methods We examined 176 healthy women aged 40–79 years (mean age 53.4 ± 0.6 yrs) and 117 men aged 40–79 years (mean age 59.8 ± 0.9 yrs). Bone mineral density (BMD) of whole body, PA lumbar spine and proximal femur were measured by DXA method (Prodigy, GE HC Lunar, Madison, WI, USA) and PA spine TBS was assessed by TBS Insight® software package installed on the available DXA machine (Med-Imaps, Pessac, France).

Results We have observed a significant decrease of TBS as a function of age (F = 6.56; p = 0.0003) whereas PA spine BMD was significantly increasing with age (F = 4.04; p = 0.008) in the examined women. This contradiction can be traced to spinal osteoarthritis and degenerative diseases progressing with age in the elderly patients. TBS was significantly lower in women with duration of PMP over 4 yrs (p = 0.003) in comparison with women without menopause; BMD of spine significantly decreased in women with duration of PMP over 7–9 yrs (p = 0.02). So, the TBS can detect changes in the state of bone tissue at an earlier stage than BMD. We have observed a significant decrease of TBS in men with ageing (F = 2.44; p = 0.05). Overall TBS values in men are lower than the age-matched TBS values in women.

Conclusion TBS is an independent parameter, which has a potential diagnostic value of its own, without taking into account the BMD results.
The aim was to study the age-related particularity of relationship between structural-functional state of bone tissue and development of knee osteoarthritis (KOAs) in women of postmenopausal period.

**Material and Methods**

175 women in postmenopausal period aged 50–79 years with knee osteoarthritis were examined, the control group consisted of 60 healthy women. A diagnosis of osteoarthritis was performed due to the criteria of American Rheumatology Association (1995), the stage by Kellgren-Lourens’ classification. Bone state was measured by dual-energy X-ray absorptiometry “Prodigy”(DXA), calcaneus quantitative ultrasound (QUS) densitometry “Sahara”, digital X-ray radiogrammetry (DXR) of the II–IV metacarpal bones (OSTIM+).

**Results**

We found a significant correlation between indices of ultrasound densitometry and presence and stage of KOA in postmenopausal women. In patients with stage I of KOA densitometry data were significantly higher compared with healthy women, but in patient with stage III of KOA they were significantly lower (stiffness index: 0 st. KOA: 76.5 ± 16.4; I: 83.6 ± 15.9; II: 71.0 ± 13.6; III: 67.8 ± 14.1; F = 4.33, p = 0.005). Analysis of aging particularities showed that significant differences of ultrasound densitometry data were in postmenopausal women aged 50–59 and 60–69 years with knee osteoarthritis, but were not in patients 70–79 years old. In postmenopausal women we did not find significant relationship between indices of DXA (lumbar spine, neck, total femur) and digital X-ray absorptiometry and presence/stage knee osteoarthritis, except bone mineral density (BMD) of total body and total spine. The indices of BMD of total spine were significantly higher in postmenopausal women with stage III of KOA compared with healthy patients and women with early stages of osteoarthritis (0 st. KOA: 0.90 ± 0.12; I: 1.00 ± 0.10; II: 1.01 ± 0.15; III: 1.08 ± 0.12 g/cm²; F = 7.31, p = 0.0001).

**Conclusion**

Presence and stage of KOA had significant influence on ultrasound densitometry, but not on DXA indices (lumbar spine, neck, total femur) and digital X-ray absorptionmetry.

**Therapeutic adherence to osteoporosis treatment in Slovak patients**

**Objective**

Adherence of patients to therapy is a major determinant of therapeutic success, which is not included in most clinical studies. This is especially true for chronic diseases with few subjective symptoms, such as osteoporosis. The aim of our study was to describe and to analyze the therapeutic adherence to several widely used anti-osteoporotic medications in real-world medicine in Slovakia.

**Methods**

Using a retrospective approach, data about drug prescriptions for 8223 patients from 3 consecutive years were analyzed regarding compliance and persistence. Compliance was measured as medication possession ratio and ratio between the supply of the drugs in the treatment time according to the prescriptions and the time of observation. Persistence was assessed as the percentage of patients who used the drug without a gap for the given time period.

**Results**

The average compliance was 70 %, 59 %, and 4 % for 6, 12, and 24 months, respectively. Average persistence was very low with 54 %, 42 %, and 22 % for 6, 12, and 24 months, respectively. Total average persistence was only 9.8 months. Medications with lower frequency of application tended to be associated with higher adherence.

**Conclusion**

In conclusion, the therapeutic adherence to anti-osteoporotic treatments varies between the available drugs and drug regimens. In general, the adherence is very low but comparable to previously published studies from other countries. This variability of adherence should be considered in clinical decision making together with the variability of therapeutic efficiency found in clinical studies.

**Administration of vitamin D supplements in postmenopausal women**

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**Background**

Postmenopausal women are traditionally regarded as the population most affected by vitamin D deficiency; likewise this is about the most frequently seen population for a general practitioner, as well as for a number of other specialists. Development of an adequate tailored approach to the treatment of underlying vitamin D deficiency in this population is a challenging task and needs further investigation.

**Objectives**

To assess the efficacy and safety of vitamin D and calcium supplements in postmenopausal women with and without vitamin D deficiency and to verify which subgroups may be less susceptible to the proposed treatment to potentially adjust the treatment scheme.

**Methods**

We have randomized 70 hospitalized women aged 46–87 years (mean 64.9 ± 9.5) into either of the two groups: treatment (50 subjects, 65.1 ± 8.8 years old, BMI 27.22 ± 4.51 kg/m²) and control (20 subjects, 64.5 ± 11.1 years old, BMI 26.68 ± 4.95 kg/m²) for a 6-month treatment from 1st Oct 2013 onwards. Patients with confounding factors in terms of bone metabolism were excluded from the study. Subjects in the main group received 1000 mg calcium and 3800 IU vitamin D during the titration phase (mean 51.96 ± 12.28 days, but the duration was calculated on an individual basis according to the baseline 25 (OH)D level, as well as the body mass). Maintenance dose (1000 mg calcium, 1800 IU vitamin D) was then administer until the end of the study. Biochemistry (calcium, phosphor, alkaline phosphatase, lipids, as well as 25 (OH)D) was being made throughout the study.

**Results**

As early as 3 months after starting the treatment there was a significant increase (p < 0.001) in 25 (OH)D levels in the treatment group: 35.60 ± 8.21 nmol/l as compared to baseline levels of 25.20 ± 9.76 nmol/l. Remarkably, the treatment was most effective in the oldest subgroup (> 70 yrs), as well as in subjects with the BMI 25.0–28.99 kg/m². The difference in pre- and post-treatment 25 (OH)D values was the largest in the previously deficient patients. After the treatment, there were no changes in calcium levels, although the phosphor level had slightly diminished (1.15 ± 0.15 mmol/l as compared to the initial 1.18 ± 0.15 mmol/l; p = 0.02), and so did PTH (36.69 ± 11.39 pg/ml as compared to baseline 40.02 ± 10.79 pg/ml; p = 0.03). Alkaline phosphatase levels increased from 60.81 ± 23.69 IU/l to 71.00 ± 16.24 IU/l (p = 0.04).

**Conclusions**

The suggested treatment scheme was proven to be effective across all age groups in postmenopausal women. It was marginally less effective in patients with obesity as it might have been expected due to the need to build up their depot reserves. As the treatment turned out to be effective, relatively quick, and had a reasonable safety profile it may be beneficial for all vitamin D-deficient postmenopausal women.

**References**


McAlindon T, Felson DT, Zhang Y, et al. Relation of Dietary Intake and Serum Levels of Vitamin D to Progression of Osteoarthritis of the Knee among Participants in the Framingham Study. Boston University Medical Center, Tufts University.

**Hyperuricemia, Bone Mineral Density and TBS of Ukrainian Men**

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Aim To determine the prevalence of hyperuricemia affecting Ukrainian men in relation to bone mineral density and TBS.

Objects Ukrainian men (n = 132), age of the examined patients from 50 to 80 years. Average age of examined patients was 58.2 ± 1.3 years. According to the levels of uric acid in the blood serum, all patients were divided in four quartiles.

Methods Uric acid level in blood plasma was determined by the uricase-peroxidase method, bone mineral density – by means of the Prodigy unit (GE Medical systems, model 8743, 2005). The TBS was evaluated using the installed TBS iNsight® software for an X-ray densitometer (Med-Imaps, Pessac, France).

Results The rate of hyperuricemia affecting the Ukrainian men was 23 % in the age group of 50–59-year-olds, 33 % in the age group of 60–69-year-olds, 29 % in the age group of 70–79-year-olds. The frequency of osteoporosis in men with hyperuricemia was lower compared with men who had a normal level of uric acid (4 % and 17 % at the level of the lumbar spine, and 4 % and 15 % at the level of femoral neck). Bone mineral density was significantly higher in case of men having the highest levels of uric acid in the lumbar spine (F = 2.78; p = 0.04), radius 33 % (F = 3.96; p = 0.01) and total body (F = 2.70; p = 0.04). TBS was significantly higher in patients who had the lowest levels of uric acid compared with patients who had the highest level of uric acid (Q1 = 1.17 ± 0.02, Q4 = 1.04 ± 0.02; p < 0.05).

Conclusions We determined that men with low levels of uric acid had significantly lower levels of bone mineral density, but the TBS in men who have the highest levels of uric acid is higher.
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