Conclusions: These results suggest that periodontitis associations with bone metabolic disturbances. In patients with periodontitis unbalanced bone remodeling was found: decreased bone formation. The results suggest the necessity to correct bone tissue metabolism in patients with generalized periodontitis by osteotropic medications.

PP09. MINERAL AND BONE DISTURBANCES IN PATIENTS WITH CHRONIC KIDNEY DISEASE

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Introduction: Patients with chronic kidney disease (CKD) frequently have disturbances in mineral metabolism, abnormalities in vitamin D. parathyroid hormone (PTH) homeostasis and bone disorders, known as CKD- MBD.

Objectives: To study the prevalence of bone and mineral metabolism disorders in patients with various stages of CKD.

Methods: We analyzed data on 220 adults with CKD aged 20-61 years. 78 (35.5%) patients with CKD II-IV stages and 142 (64.5%) patients on hemodialysis (CKD VD). BMD was measured using DEXA in L1-L4 segment and femoral neck. The laboratory investigations included PTH, vitamin D, calcium (Ca), phosphate (P) serum concentrations.

Results: The concentrations of Ca × P product and PTH were significantly higher in hemodialysis patients compared to CKD stages II-IV ones (Ca × P product 4.78 ± 0.11 vs 3.68 ± 0.18, $p < 0.01$, iPTH 601.28 ± 68.45 vs 289.10 ± 60.48 $p < 0.01$). Analyzing the compliance with KDIGO 2011 recommendations it was found that all four parameters met target levels of only in 14.1% patients with CKD II-IV stages and 3% with CKD VD stage. Vitamin D insufficiency was found in 44.9% of CKD II-IV patients and 51.4% those with CKD VD. BMD was decreased in 55.4% CKD II-IV stages patients and in 19.1% it was lower than -2.5 T SD. In CKD VD BMD was decreased in 51.1% and in 34.0% it was lower than -2.5 T SD. Negative association between decreased renal function and decreased BMD was established: GFR correlated s with spine-BMD ($r = -0.452$, $p < 0.05$).

Conclusions: In CKD patients dominant disorders of mineral metabolism are hyperphosphatemia, secondary hyperpathyroidism and 25 (OH) D_3 insufficiency. They occur in the early stages of CKD and progress with the decline of renal function, especially in hemodialysis and result in bone loss.

PP10. TRIKS AND PITFALLS IN DXA INTERPRETATION

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Introduction: Many factors can cause wrong results and incorrect interpretations in DXA. Assuming that a quality control program of the equipment is working, the causes rely mainly in the patient or in the interpretation.

Objectives: Identifying causes of reanalysis and repetition of DXA analysis in an outpatient practice.

Methods: We reviewed all the DXA examinations done in 6185 patients, made in 2 sites, with LUNAR DPX equipments, by a team of 12 technologists. Examinations were reported by two consultant radiologists (and also certified clinical densitometrists). Correlation with other imaging modalities (X-ray, CT, MR) was available on PACS in many cases.

Results: Being this poster a *pictorial assay*, the total number of cases or the full distribution are not relevant. We will present the more frequent identified errors and other rare ones: errors in data introduction, patient artefacts, anatomy variants, deficient position and coexisting diseases or therapeutic instrumentations (and not forgetting analysis mistakes...) The main objective in this presentation is to learn with our mistakes.

Conclusions: Particular care in checking that patient has really removed all artefacts and that hasn't done (or is going to make) another imaging technique. Don't rely in equipment anatomical detection. Any abnormal discrepancy should be checked and eventually additional X-ray image be done. We hope that this pictorial assay can help reduce the number of second examinations and difficult interpretations and alert to potential error situations.

PP11. TBS IN FRAGILITY FRACTURE RISK ASSESSMENT

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Objectives: The aim of the study was to evaluate the Bone Mineral Density (BMD), Trabecular Bone Score (TBS) and the 10-year probability of major osteoporotic fracture and hip fracture in healthy men of different ages.

Methods: We've examined 300 men aged 40-89 years. They were divided into groups depending on their age: 40-49 yrs (n = 52), 50-59 yrs (n = 86), 60-69 yrs (n = 89), 70-79 yrs (n = 59), 80-89 yrs (n = 14). The 10-year probability of hip fracture and the 10-year probability of major osteoporotic fracture risk were calculated by Austrian, Polish and Russian FRAX® models. BMD of whole body, PA lumbar spine and proximal femur were measured by DXA method (Prodigy, Lunar) and PA spine TBS were assessed by TBS iNsight® software package installed on the available DXA machine (Med-Imaps, Pessac, France).

Results: We have observed a significant increase of 10-year probability of major osteoporotic fracture in men aged 80-89 yrs ($p < 0.01$) by Russian FRAX® model, 60-89 yrs ($p < 0.01$) – Austrian FRAX® model, 70-89 yrs ($p < 0.01$) – Polish FRAX® model in comparison with men aged 40-49 yrs. 10-year probability of hip fracture was significantly increased in men aged 70-89 yrs in comparison with men aged 40-69 yrs ($p < 0.01$). It was determined the significant decreasing of TBS in men according to their age (40-49 yrs – 1.116 ± 0.02, 50-59 yrs – 1.111 ± 0.02; 60-69 yrs – 1.118 ± 0.02; 70-79 yrs. 1.062 ± 0.02, 80-89 yrs – 1.080 ± 0.05; $F = 2.42$, $p = 0.048$). TBS in men was significantly higher in subject with normal BMD (1.121 ± 0.01) compared with patient who osteoporosis – 1.066 ± 0.03 ($p = 0.04$). The significant correlation was observed between TBS and BMD L1-L4 in examined men ($r = 0.12$; $p = 0.03$). There wasn't any correlation between TBS and BMD of femoral neck.

Conclusions: TBS significantly decreased with ageing. Subjects with osteoporosis have significantly lower TBS compared with normal BMD examined. It was found a significant correlation between TBS and BMD L1-L4.

PP12. TRABECULAR BONE SCORE IN PORTUGUESE POPULATIONS

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The bone strength is mostly dependent on bone mineral density and microarchitecture (quality). The BMD by DXA scan is the gold

standard for a precocious diagnosis of osteoporosis and as the BMD decreases the osteoporotic fracture risk increases. The assessment and qualification of the bone microarchitecture evaluated by the trabecular bone score (TBS), which is determined from the grey-level variation analysis of the lumbar spine DXA images using the experimental variogram concept, quantifying local variations in pixels intensities. TBS is positively associated with trabecular density connections and negatively related with trabecular separations. It was shown that this innovative quantitative index qualifies the state of bone microarchitecture, independently of the bone density. In Portuguese populations, our group has already evaluated: 1. In men with hypogonadisms we detected low TBS, as compared with a control group. 2. the TBS with the BMD at L_1-L_4, as well as the correlation between the spine TBS and the BMD in women with one or more osteoporotic fractures and in women without fractures. The TBS was reduced in the osteoporotic fracture group but, however, there was an overlap of the BMD values in both groups, without a differentiation of women with and without osteoporotic fractures. 3. the relationship between the TBS and the vitamin D plasma levels in normal men and in postmenopausal normal women; the obtained data suggest that vitamin D levels could also play a main role on bone quality, as these results showed that low 25(OH)D concentrations tend to have low lumbar spine TBS and thus worst bone quality. 4. In a group of normal men, a correlation was detected between osteocalcin and TBS. Finally, the data of our studies suggest, that TBS may also be a very useful diagnostic tool which may supplement nicely the BMD measurements and improve osteoporosis management.

WPP01. VITAMIN D DEFICIENCY IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Introduction: Vitamin D has multiple physiological functions in the human organism; including significant role in the regulation of the immune system. Nowadays vitamin D deficiency and insufficiency are widespread conditions and is associated with the pathogenesis of several autoimmune diseases including rheumatoid arthritis.

Objectives: To evaluate the frequency of vitamin D insufficiency and deficiency in patients with rheumatoid arthritis and its association with disease activity.

Methods: The study included 93 patients with rheumatoid arthritis, 74.2% were women. Mean age of women was (53.45 ± 11.16) and men. (53.29 ± 12.06) yr. old ($p > 0.05$). Mean duration of the disease was (8,59 ± 5,99) yrs. Subjects suffering from liver and kidney insufficiency and those who had received vitamin D in the previous 3 months have been excluded. Disease activity was assessed by DAS-28 score, joint pain degree, morning stiffness time and laboratory measures including ESR. The level of $25(OH)D_{total}$ was evaluated by electrochemiluminescence method (Elecsys 2010, Roche). Vitamin D deficiency was defined as a 25(OH)D below 20 ng/ml, and vitamin D insufficiency as 25(OH)D of 21–29 ng/ml.

Results: In patients with rheumatoid arthritis the frequency of vitamin D insufficiency and deficiency was 37.63 and 54.84% accordingly. 13.98% subjects with rheumatoid arthritis had severe vitamin D deficiency. 25(OH)D was associated with ESR level ($r = -0.26$; $p < 0.05$), DAS-28 ($r = -0.36$; $p = 0,001$), CRP ($r = -0.24$, $p < 0.05$), Hb ($r = 0.27$; $p = 0.01$). The risk of high disease activity is in patients with vitamin D deficiency (RR = 3.00 (95%CI: 1.01. 8.86, $p < 0.05$).

Conclusions: Vitamin D deficiency can be an important factor in worsening of rheumatoid arthritis. The effect of vitamin D supplementation is needed to determine if a causal relationship exists.

WPP02. THE LEVEL OF VITAMIN D IN PATIENTS WITHCHRONIC PERIODONTITIS

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Introduction: Recent studies discussed the possibility effects of vitamin D on chronic periodontitis. It's related to its effect on calcium metabolism, immune system and stimulation production of antimicrobial peptides. Many authors showed the presence of vitamin D deficiency and insufficiency, both in Ukraine and others European countries.

Objectives: To determine level of 25(OH)D ($25(OH)D_2 + 25(OH)D_3$) in patients with chronic periodontitis.

Methods: Study involved 198 patients with chronic periodontitis aged 18-68 years old. The diagnosis of chronic periodontitis was determined based on clinical and radiographic methods of investigation. The determination of 25(OH)D level was performed by Elecsys 2010 analyzer (Roche Diagnostics, Germany).

Results: This study shown that 73.7% of patients with chronic periodontitis had vitamin D deficiency (31.8%) and insufficiency (41.9%). Normal level of vitamin D had 26.3% patients with chronic periodontitis. Only 4.6% of subjects had severe deficiency. The mean level of vitamin D in patients with chronic periodontitis was 25.08 ± 10.1 ng/ml. There is no significant correlation between vitamin D levels in patients with severe (22.99 ± 7.49 ng/ml) and moderate (23.86 ± 9.46 ng/ml) periodontitis.

Conclusions: Most patients with chronic periodontitis have vitamin D deficiency and insufficiency. No significant correlation between vitamin D levels in patients with severe and moderate periodontitis was observed.

WPP03. THE WAYS OF VITAMIN D DEFICIENCY CORRECTION IN UKRAINE

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Introduction: Vitamin D deficiency (VDD) and insufficiency are widespread conditions. Only 4.6% of the Ukrainian citizens were found to have normal 25(OH)D values, whereas 81.8% were diagnosed with VDD. High incidence of vitamin D hypovitaminosis makes doctors to search for the ways of its effective treatment and prevention.

Methods: In cooperation with Ukrainian National University of Food Technologies high-fiber baked bread with a cholecalciferol concentration of 25 μg per 277 g was developed. To study its safety and efficacy in VDD correction, 30 postmenopausal women aged 45-80 years were examined. The study lasted for 21 days. Likewise, individual targeted therapy of vitamin D deficiency (ITTVD) was developed for correction of VDD. ITTVD consists of two phases – saturation period and maintenance period. The saturation therapy includes combined medication: calcium (1,000 mg) and 800 IU of vitamin D and an additional 3,000 IU of vitamin D per day. Maintenance therapy includes 2,000 IU of vitamin D per day. To study the efficacy and safety of ITTVD, 70 postmenopausal women aged 46-87 years with skeletal diseases were enrolled. Serum 25(OH)D level was assessed by electrochemiluminescent method (Elecsys 2010).

Results: Intake of fortified bread has facilitated a significant increase in serum 25(OH)D levels. The mean level of serum 25(OH)D increased from 14.20 ± 2.60 to 20.05 ± 2.74 ng/ml ($p < 0.001$) in women with VDD. 3 months of ITTVD leads to a significant ($p < 0.001$) increase in serum 25(OH)D levels: 35.60 ± 8.21 nmol/L as compared to baseline levels of 25.20 ± 9.76 nmol/l.

Conclusions: Based upon our results, ITTVD and fortified bread administration can be recommended for vitamin D correction in older age groups. Our ITTVD equation has proven to be effective.