patients, respectively. When patients whose serum 25(OH)D was ≤ 11 ng/mL took alfacalcidol, DU and SF occurred in 11.1% and 22.2%, respectively. With relatively high-dose of native vitamin D (cholecalciferol) supplementation, no delayed union and no stress fracture were observed, while one case who quit taking supplements because of the drug eruption end up with the SF.

Discussion & Conclusions: Our study suggests that proactive supplementation of the native vitamin D would be advisable to improve the result of the surgery.

doi:10.1016/j.bonr.2020.100492

P170

Vitamin D status in 1,533 medical examinees at a regional public general hospital

Satoshi Hagio[a], Taro Mawatari[a], Gen Matsui[a], Takahiro Iguchi[a], Hiroaki Mitsuyasu[a], Yasuhiro Mizuki[b]
[a]*Orthopaedic Surgery, Hamanomachi Hospital, Fukuoka, Japan*
[b]*Orthopaedic Surgery, Sasebo Kyosai Hospital, Nagasaki, Japan*

Purpose: The prevalence of vitamin D deficiency is a worldwide concern. The purpose of this study was to clarify the vitamin D status in all the medical examinees.

Methods: We retrospectively reviewed 1533 patients (320 male, 1213 female; mean age, 66 years) who visited our regional public general hospital in Japan (36 departments, 468 beds) and examined their serum 25(OH)D levels. We also gathered available information about other blood chemistry data and bone mineral density. General nutritional status was evaluated using the controlling nutritional (CONUT) score, which is calculated based on the serum albumin concentration, total peripheral lymphocyte count, and total cholesterol concentration. CONUT scores 0-1, 2-4, 5-8, and 9-12 represented normal, mild, moderate, and severe dysnutritional states, respectively.

Results: The average serum 25(OH)D concentration was 15.4 ng/mL; the concentrations were < 10 ng/mL in 308 cases (20%), 10-20 ng/mL in 901 cases (59%), 20-30 ng/mL in 259 cases (17%), and 30- ng/mL in only 65 cases (4%). Regarding gender, 65.9% of male cases and 82.2% of female cases were serum 25(OH)D concentrations < 20 ng/mL, and vitamin D deficiency was very common across all age groups. Serum 25(OH)D levels were higher in October and lower in March. The average CONUT scores were 1.80 in male cases (n=299) and 1.44 in female cases (n=1097). There were no clear relationships between serum 25(OH)D levels and LS- and FN- BMD. Serum 25(OH)D and CONUT scores were only correlated when serum 25(OH)D levels were < 10 ng/mL ($p < 0.05$). Among 65 cases in which the vitamin D level was sufficient, 17 patients were taking native vitamin D supplements.

Discussion & Conclusions: In our study, 97% of the medical examinee were vitamin D insufficiency or deficiency, and 20% was severe deficiency (< 10 ng/mL), and proactive supplementation is advised.

doi:10.1016/j.bonr.2020.100493

P171

Serum folate and vitamin B12 levels and the incidence risk of atherosclerotic events over 12years: The Korean Genome and Epidemiology Study(KoGES)

Ha-Na Kim, Young-Mi Eun, Sang-Wook Song
Department of Family Medicine, St Vincent's Hospital, College of Medicine, The Catholic University of Korea, Suwon-si, Republic of Korea

Atherosclerosis, a common cause of atherosclerotic vascular diseases, is associated with several risk factors including hyperhomocysteinemia, and vitamin B12 and folate are involved in homocysteine metabolism; thus, serum folate and vitamin B12 status may be associated with the risk of atherosclerotic vascular diseases mediated by homocysteine plasma concentrations. Therefore, we hypothesized that low vitamin B12 and folate levels are related to higher risks of atherosclerotic vascular disease and investigated the risk of atherosclerotic vascular events in Korean adults with low serum vitamin B12 and folate levels. This population-based cohort study followed 421 subjects aged 40-69 years for 12 years, 2003-2014. Over the follow-up period, 38 (9.0%) atherosclerotic events occurred. However, serum folate and vitamin B12 levels were not associated with the risk of stroke, coronary artery disease, or myocardial infarction or the development of peripheral arterial disease after adjustment for age, sex, smoking status, alcohol consumption, physical activity, body mass index, serum creatinine, and high-sensitivity C-reactive protein levels and a history of diabetes, hypertension, or dyslipidemia. In conclusion, the incidence of atherosclerotic vascular events in Korean adults aged 40-69 years was not associated with the serum folate or vitamin B12 status.

doi:10.1016/j.bonr.2020.100494

P173

Comparative effectiveness of three methods for body composition assessment in the verification of manifestations of sarcopenia in obese patients

Valeriia Vasileva, Larisa Marchenkova
National Medical Research Center of Rehabilitation and Balneology, Moscow, Russian Federation

Aim of the study was to compare the effectiveness of three methods of body composition assessment such as bioimpedans analysis (BIA), air-replacement bodyplatismography (BodPod) and Dual X-ray absorptiometry Total body program (DXA Total Body) in the verification of reducing of skeletal muscle mass as sign of sarcopenic obesity in obese patients.

Material and methods: The study group included 95 patients aged 21-69 y.o. (average age 53,9±11,05 years) with BMI≥30.0 kg/m2. The control group included 37 patients aged 37-69 y.o (average age 50,73±10,6 years) of the same age without obesity with BMI 20.0-29.9 kg/m2. Body composition was tested using BIA, BodPod and DXA with calculating fat, lean and skeletal muscles mass (kg) and % in all the patients.

Results: According to BIA the groups differ only in fat mass (FM) 42.75 (4.8;6.3) vs. 33.15 (28.4;35.5) kg; p=0.036 and did not differ (p>0.05) in lean (LM), skeletal muscle mass (SMM) and in % of FM and SMM. According to BodPod analyses groups differed in the FM 3.4 [36.81;69.94] vs 31.02 [23.22;38] kg, p=0.007, % FM 45.4 [42.1;53.8] vs 37.7 [28.6;41.1], p=0.003 and % LM - 54.6 [46.2;57.9] vs 62.3 [58.9;71.4], p=0.003, but had statistically equivalent values of LM 55 [49.48;67.77] vs 40.36 [33.12;49.06] kg, p=0.19. According to DXA Total Body analyses statistically significant differences (p< 0.05) have been identified between the groups in FM and % FM of the hands, feet, trunk, total body (p>0.05), but not in LM and % LM (p>0.05).

Conclusions: From methods of body composition assessment, air-replacement bodyplatismography (BodPod) is the most sensitive in the verification of skeletal muscle mass reduction in obese patients. This method shows that patients with obesity have a significantly reduced muscle mass compared with normal weight or overweight subjects.

doi:10.1016/j.bonr.2020.100495

P176

Association between bone mineral density and genetic polymorphisms of Wnt signaling pathway among older adults in Taiwan

Sui-Lung Su
School of Public Health, National Defense Medical Center, Taipei, Taiwan, PR China

Background: Osteoporosis is one of the chronic diseases of the elderly, which is commonly found in the elderly population, and the prevalence rate of osteoporosis increases with age. The cause of osteoporosis is complex, and bone mineral density(BMD) is generally lost with age, some factors will cause loss of bone such as lack of exercise, smoking, drinking, lack of calcium diet, lack of sunbathing. Especially genetic factors may play an important role.

Objective: To explore the association between BMD and the polymorphism of Wnt signaling pathway, and to test the gene-environment interaction. Provide early prevention strategies for high risk groups of bone deficiency.

Material and methods: We performed a case-control study and recruited 764 participants who received health examination at Health Management Center of Tri-Service General Hospital from March 2017to August 2018. Demographic data were obtained by structured questionnaire, and bone mass density was measured by Dual-Energy X-ray Absorptiometry (DEXA). DNA was extracted from a peripheral blood sample, and the genotypes were determined using polymerase chain reaction and iPLEX Gold SNP genotyping methods.Subjects with T-score < -1 was classified as osteopenia case group, t-score ≧-1 was classified as healthy control group. All data analyses were done by using R software version 3.4.2.

Results: In female, after adjusted age and BMI, the frequencies of rs2707466 (WNT16) CT genotype were decreased risk of T-score< -1 than CC genotype (OR=0.60, 95% CI=0.38 - 0.93). T allele were decreased risk of T-score< -1 than C allele (OR=0.60, 95% CI=0.42 - 0.87). CT+TT genotype were decreased risk of T-score< -1 than CC genotype (OR=0.57, 95% CI=0.37 - 0.87).

Conclusion: We found that rs2707466 (WNT16) in female were associated with T-score< -1.

doi:10.1016/j.bonr.2020.100496

P177

Glucocorticoid receptor promotes osteoblast and adipocyte differentiation by recruiting and being recruited to lineage selective enhancers

Martin R. Madsen[a], Moustapha Kassem[b], Susanne Mandrup[a], Alexander Rauch[b]
[a]*Functional Genomics & Metabolism Research Unit, University of Southern Denmark, Odense, Denmark*
[b]*Molecular Endocrinology & Stem Cell Research Unit, University of Southern Denmark, Odense, Denmark*

The glucocorticoid receptor (GR) is a ligand activated hormone nuclear receptor targeted in the treatment of immune and auto-inflammatory disorders. While frequently prescribed, glucocorticoid therapy is associated with several adverse side effects including osteoporosis. In glucocorticoid-induced osteoporosis numbers of bone-forming osteoblast cells are reduced and marrow adipose volume is increased, suggesting that altered differentiation from the common precursor (MSCs) underlies glucocorticoid-induced osteoporosis.

Dexamethasone (dex) is a potent agonist of GR and a common component of both the osteogenic and adipogenic differentiation cocktail when differentiating MSCs *in vitro*. We studied the role of GR in lineage speciation of human telomerase-immortalized mesenchymal stem cells from bone marrow (hMSC-TERT cells) by loss-of-function experiments and withdrawal of dex. By employing global profiling of gene expression, enhancer activity and GR binding early after osteogenic and adipogenic stimulation we identified cell-type selective and common GR dependent programs (Figure A). Importantly, only activation of enhancers was associated with GR binding (Figure B) while lineage context and GR binding intensity were equally important for GR dependent enhancer activity (Figure C). Machine learning algorithms identified known GR interactors such as C/EBP-beta but also novel transcription factors that affect lineage speciation of MSC. Knockdown of either *CEBPB* or *NR3C1* had similar effects on early transcriptional changes due to interaction of C/EBP-beta and GR on the chromatin level with GR recruiting C/EBP-beta to osteoblast-specific and common activated enhancers and vice versa for adipocyte-specific enhancer activation.

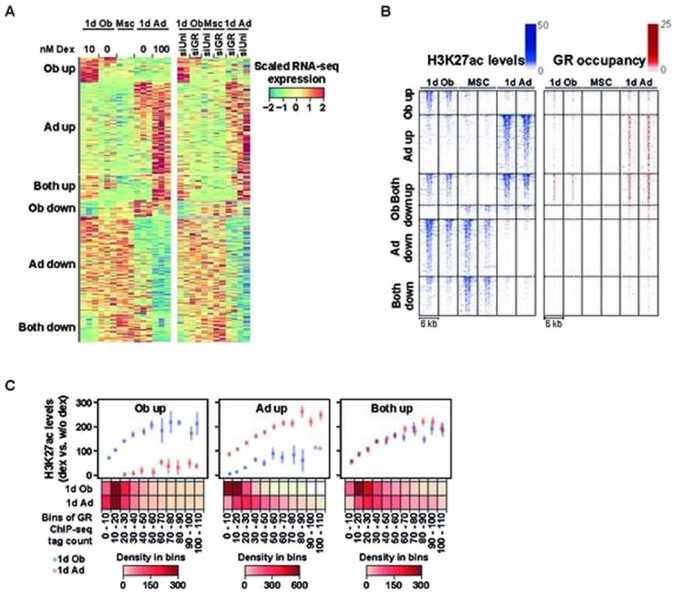

Fig.

doi:10.1016/j.bonr.2020.100497

P178

RUNX2 T-1025C variant is associated with bone-related biochemical parameters and fracture risk in Maltese postmenopausal women

Melissa Marie Formosa, Ritienne Formosa, Angela Xuereb-Anastasi
University of Malta, Msida, Malta

Background & objectives: Runt-related transcription factor 2 (RUNX2) is a major transcription factor involved in osteoblast and chondrocyte differentiation, skeletogenesis and fracture repair. Transactivation of *RUNX2* is under tight regulatory control particularly via promoter 2 (P2). The study aimed to assess the effect of the P2 *RUNX2* T-1025C variant in relation to bone mineral density (BMD) at different anatomical sites, fracture risk and levels of biochemical parameters in the Maltese population.

Methods: Genotyping was performed in 1,045 Maltese postmenopausal women from the Malta Osteoporotic Fracture Study using the TaqMan® fluoregenic 5' nuclease allelic discrimination assay. Genotype-phenotype associations were analysed using the Mann-Whitney statistic whereas odds ratios with 95% confidence intervals were computed using logistic regression analysis adjusted for confounders.