Selección de Resúmenes de Menopausia

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Changes in adiposity over the life course and gene expression in postmenopausal women

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Background: Early life adiposity and changes in adiposity over the life course are associated with mammographic breast density among postmenopausal women. However, the underlying mechanisms are unknown; therefore, we comprehensively examined the associations of early life body mass index (BMI) and changes in BMI from ages 10, 18 to age at mammogram with growth factor, RANK pathway, and sex hormone gene expression in 372 postmenopausal women. Methods: We estimated early life BMI at age 10 using the validated 9-level Stunkard pictogram. We calculated BMI at other ages (18, 30, and current age at mammogram) by dividing weight in kilograms at these ages with height in meters squared. Sequencing for gene expression was performed using the NanoString nCounter system. After adjusting for confounders, we estimated associations using multivariable linear regressions. Results: A 10 kg/m2 increase in early life BMI at age 10 was associated with a 17.2% decrease in RANKL gene expression (95% confidence interval [CI] = -30.8, -0.9) but was not associated with changes in other markers. BMI changes from ages 10, 18 to age at mammogram were associated with an increase in BMP2 and decreases in RANK, RANKL, and TNFRSF13B gene expression but were not associated with gene expression of other markers. A 10 kg/m2 increase in early life BMI from age 10 to current age was associated with a 7.8% increase in BMP2 (95% CI = -1.4, 17.8), an 8.5% decrease in RANK (95% CI = -13.9, -2.8), a 10.4% decrease in RANKL (95% CI = -16.9, -3.3), and an 8.5% decrease in TNFRSF13B gene expression (95% CI = -13.8, -2.8). Conclusion: The results provide new insights into the biological mechanisms underlying the associations of adiposity changes from early life to adulthood and early life adiposity with mammographic breast density in postmenopausal women.

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Aged bone matrix-derived extracellular vesicles as a messenger for calcification paradox

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Adipocyte differentiation of bone marrow mesenchymal stem/stromal cells (BMSCs) instead of osteoblast formation contributes to age- and menopause-related marrow adiposity and osteoporosis. Vascular calcification often occurs with osteoporosis, a contradictory association called "calcification paradox". Here we show that extracellular vesicles derived from aged bone matrix (AB-EVs) during bone resorption favor BMSC adipogenesis rather than osteogenesis and augment calcification of vascular smooth muscle cells. Intravenous or intramedullary injection of AB-EVs promotes bone-fat imbalance and exacerbates Vitamin D3 (VD3)-induced vascular calcification in young or old mice. Alendronate (ALE), a bone resorption inhibitor, down-regulates AB-EVs release and attenuates aging- and ovariectomy-induced bone-fat imbalance. In the VD3-treated aged mice, ALE suppresses the ovariectomy-induced aggravation of vascular calcification. MiR-483-5p and miR-2861 are enriched in AB-EVs and essential for the AB-EVs-induced bone-fat imbalance and exacerbation of vascular calcification. Our study uncovers the role of AB-EVs as a messenger for calcification paradox by transferring miR-483-5p and miR-2861.

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Women with Turner syndrome are both estrogen and androgen deficient - the impact of hormone replacement therapy

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Context: Turner syndrome women suffer from hypergonadotropic hypogonadism, causing a deficit in the gonadal hormone secretion. As a consequence, Turner syndrome women are treated with estrogen from the age of 12 years old, and later in combination with progesterone. However, androgens have been given less attention. Objective: To assess sex hormone levels in Turner syndrome women, both treated and non-treated with hormone replacement therapy (HRT),

and investigate the impact of HRT on sex hormone levels. Design and participants: Ninety-nine Turner syndrome participants were followed three times from August 2003 to February 2010. Seventeen Turner syndrome women were lost during follow-up. Control group 1 consisted of sixty-eight healthy age-matched control women seen once during this period. Control group 2 consisted of 28 young, eumenorrheic women sampled 9 times throughout the same menstrual cycle. Setting: Aarhus University Hospital. Main outcome measures: Serum concentrations of follicle stimulating hormone (FSH), luteinizing hormone (LH), 17β-estradiol, estrone sulphate, DHEAS, testosterone, free androgen index, androstenedione, 17-OH progesterone and sex hormone-binding globulin (SHBG). Results: All androgens, 17-OH progesterone and SHBG were 30-50% lower in Turner syndrome women compared with controls ($p < 0.01$). FSH, LH and estrone sulphate were more than doubled in Turner syndrome women compared with controls ($p < 0.02$). Using principal component analysis, we describe a positive correlation between Turner syndrome women receiving HRT, elevated levels of SHBG and decreased levels of androgens. Conclusion: The sex hormone profile in Turner syndrome reveals a picture of androgen deficiency, aggravated further by HRT. Conventional HRT does not normalize estradiol levels in Turner syndrome.

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Bone mass density in lean and overweight women with polycystic ovary syndrome

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Introduction: Polycystic ovary syndrome is a condition characterized by hormonal and metabolic disturbances that may affect bone health. The purpose of this study was to investigate the effect of polycystic ovary syndrome on bone mineral density and to examine which clinical characteristics of the syndrome could influence bone mineral density. Materials and methods: We examined 183 premenopausal women: 158 women with polycystic ovary syndrome and 25 healthy age- and body mass index matched controls. Bone mineral density and body composition were investigated by whole-body dual energy X-ray absorption. Total and free testosterone, sex hormone binding globulin, luteinizing hormone, follicle stimulating hormone, estradiol, fasting insulin and glucose, parathyroid hormone, calcium and 25-OH-cholecalciferol were measured. The effect of polycystic ovary syndrome on bone mineral density was analyzed by statistical two-way analysis of variance tests and multiple linear regressions for investigating the connection between bone mineral density and selected clinical parameters. Results: Women with polycystic ovary syndrome had significantly lower bone density in the lumbar vertebrae L1-L4 compared to healthy controls, independently of body mass index. We found that total lean body mass was the most important associating factor for bone mineral density and these were strongly correlated throughout all regression analyzes. We found no connection between lumbar bone density and androgen status, hyperinsulinemia, estradiol or calcium homeostasis. Conclusions: Premenopausal women with polycystic ovary syndrome have lower bone mineral density in the lumbar vertebrae L1-L4 compared to healthy controls. Total lean body mass and polycystic ovary syndrome are significantly associated to this finding.

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Associations of abdominal and cardiovascular adipose tissue depots with HDL metrics in midlife women: The SWAN Study

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Context: The menopause transition is accompanied by declines in the atheroprotective features of high-density lipoprotein (HDL), which are linked to deleterious cardiovascular (CV) outcomes. Objective: To assess the relationship between abdominal and cardiovascular (CV) visceral adipose tissues (AT) with future HDL metrics in midlife women, and the role of insulin resistance on these associations. Design: Temporal associations of abdominal and cardiovascular fat with later measures of HDL metrics. Setting: Community-based cohort. Participants: 299 women, baseline mean age 51.1 (SD: 2.8) years, 67% White, 33% Black, from the Study of Women's Health Across the Nation (SWAN) HDL ancillary study. Exposures: Volumes of abdominal visceral AT, epicardial AT(EAT), paracardial AT(PAT), or perivascular AT(PVAT). Main outcomes: HDL cholesterol efflux capacity (HDL-CEC), HDL phospholipid (HDL-PL), triglycerides (HDL-Tg), and cholesterol (HDL-C), apolipoprotein A-I(ApoA-I), HDL particles (HDL-P) and size. Results: In multivariable models, higher abdominal visceral AT was associated with lower HDL-CEC, HDL-PL, HDL-C, and large HDL-P and smaller HDL size. Higher PAT was associated with lower HDL-PL, HDL-C and large HDL-P and smaller HDL size. Higher EAT was associated with higher small HDL-P. Higher PVAT volume was associated with lower HDL-CEC. HOMA-IR partially mediated the associations between abdominal AT depots with HDL-CEC,

HDL-C, large HDL-P and HDL size; between PVAT with HDL-CEC, and PAT with HDL-C, large HDL-P and HDL size. Conclusions: In midlife women, higher visceral AT volumes predict HDL metrics 2 years later in life, possibly linking them to future CVD. Managing insulin resistance may preclude the unfavorable impact of visceral fat on HDL metrics.

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Dietary Protein Intake in Relation to the Risk of Osteoporosis in Middle-Aged and Older Individuals: A Cross-Sectional Study

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Objectives: Dietary protein intake is of great significance for the bone health of middle-aged and elderly people. This study is aimed to explore the relationships between dietary protein intake and the risk of osteoporosis in middle-aged and older individuals among US population. Methods: Based on the National Health and Nutrition Examination Survey (NHANES), this study includes a total of 20497 participants during 2005-2008, and identify 4707 middle-aged and older people aged 45 years or above. Demographic data and relevant dietary intake information are acquired through in-home management questionnaires. The logistic regression models are established to identify the odds ratio (OR) and 95% confidence interval (CI) of OP in each quartile category of energy-adjusted dietary protein intake. The receiver operating characteristic (ROC) curve is applied to explore the optimal cut-off value of daily dietary protein intake for predicting risk of OP. Results: 442 participants with OP are identified among 4707 middle-aged and older people, and the dietary protein intake of OP group is significantly lower than that of non-OP group (P<0.001). The logistic regression analysis shows that with the increase of daily dietary protein intake, the prevalence of OP in each quartile category decreases gradually (P<0.001). This trend is not altered in univariate model (P<0.001), as well as the adjustments for the covariates of age and BMI (Model 1, P<0.001), the covariates of sex (Model 2, P=0.036), the covariates of smoking, drinking alcohol, education, ratio of family income to poverty, hypertension and diabetes (Model 3, P<0.001), and the covariates of dietary intake (Model 4, P=0.008). Moreover, we also identify that the daily dietary protein intake of 61.2g is the optimal cut-off value for predicting risk of OP. Conclusion: In general, among US population, the lower daily dietary protein intake is positively related to the ascending risk of OP in middle-aged and older individuals.

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The volume of brisk walking is the key determinant of BMD improvement in premenopausal women

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Summary: Osteoporosis is an increasing health problem in postmenopausal women. Our findings indicated that long-term brisk walking with a volume greater than 16 per week is effective for improving BMD in premenopausal women. Purpose: To examine the effects of brisk walking on bone mineral density (BMD) in premenopausal women, and further determine the effective frequency, intensity, time and volume (frequency x duration) of brisk walking for training strategy prescription. Methods: 222 healthy premenopausal women were recruited for BMD measurement. According to the survey of their physical activity level, 84 subjects (age: 46±1.8) whose physical activity index ≥40 were categorized into the brisk walking group, and 138 subjects (age: 47±2.2) whose physical activity index <40 were assigned to the sedentary group. The BMD of these two groups were statistically compared with an independent t test. Next, 35 subjects from the original sedentary group were recruited for BMD measurement after 2-year moderate brisk walking. According to the volume of physical activity per week, they were divided into the control group (n = 10, aged 49±0.9), volume 8 group (n = 4, aged 48±1.2), volume 12 group (n = 7, aged 49±1.4), volume 16 group (n = 8, aged 49±1.3), and volume 20 group (n = 6, aged 49±1.5). ANOVA was used to analyze BMD before and after brisk walking among the five groups. Results: The BMD in the brisk walking group (1.00±0.008 g/cm2) was significantly higher than that in the sedentary group (0.89±0.008 g/cm2) (P<0.001). Stepwise regression analysis revealed that the volume of brisk walking was significantly correlated with BMD (P<0.001). In particular, brisk walking with a volume greater than 16 (a score of duration up to 4 and a score of frequency up to 4 or 5) per week is effective for improving BMD in premenopausal women (P = 0.03, P = 0.002, respectively). Conclusions: Long-term brisk walking is an efficient way to improve BMD. Taking brisk walks for 30 minutes per day 3 or more times per week (volume>16) is recommended to prevent bone loss in premenopausal women.