Selección de Resúmenes de Menopausia

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Sex, Hormones, Immune Functions, and Susceptibility to Coronavirus Disease 2019 (COVID-19)-Related Morbidity

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Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the virus that causes coronavirus disease 2019 (COVID-19), uses two primary receptors, type II transmembrane serine protease and angiotensin-converting enzyme-2, for priming and cellular invasion, respectively. Both proteins have been demonstrated to be present in different concentrations in females and males, which may explain a mechanism for the reported higher case-fatality rate in males. Despite the known sex difference in COVID-19 disease mortality, preliminary data suggest there are certain female populations, including pregnant and menopausal women and possibly polycystic ovarian syndrome patients who are more susceptible to COVID-19-related morbidity. This commentary analyzes the interplay between sex differences, hormones, and the immune function in each of these populations with respect to the risk and severity of COVID-19 and proposes biological rationales to explain these differences.

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Transdermal Estrogen Therapy Improves Gains in Skeletal Muscle Mass After 12 Weeks of Resistance Training in Early Postmenopausal Women

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Context: Women show an accelerated loss of muscle mass around menopause, possibly related to the decline in estrogen. Furthermore, the anabolic response to resistance exercise seems to be hampered in postmenopausal women.
Objective: We aimed to test the hypothesis that transdermal estrogen therapy (ET) amplifies the skeletal muscle response to resistance training in early postmenopausal women. Design: A double-blinded randomized controlled study. Setting: Department of Public Health, Aarhus University, Denmark. Participants: Thirty-one healthy, untrained postmenopausal women no more than 5 years past menopause. Interventions: Supervised resistance training with placebo (PLC, n = 16) or transdermal ET (n = 15) for 12 weeks. Main outcome measures: The primary outcome parameter was a cross-sectional area of quadriceps femoris measured by magnetic resonance imaging, and secondary parameters were fat-free mass (dual-energy X-ray absorptiometry), muscle strength, and functional tests. Results: The increase in muscle cross-sectional area was significantly greater in the ET group (7.9%) compared with the PLC group (3.9%) ($p < 0.05$). Similarly, the increase in whole-body fat-free mass was greater in the ET group (5.5%) than in the PLC group (2.9%) ($p < 0.05$). Handgrip strength increased in ET ($p < 0.05$) but did not change in the PLC group. Muscle strength parameters, jumping height, and finger strength were all improved after the training period with no difference between groups. Conclusion: The use of transdermal ET enhanced the increase in muscle mass in response to 12 weeks of progressive resistance training in early postmenopausal women.

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Testosterone and Bone Health in Men: A Narrative Review

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Bone fracture due to osteoporosis is an important issue in decreasing the quality of life for elderly men in the current aging society. Thus, osteoporosis and bone fracture prevention is a clinical concern for many clinicians. Moreover, testosterone has an important role in maintaining bone mineral density (BMD) among men. Some testosterone molecular mechanisms on bone metabolism have been currently established by many experimental data. Concurrent with a decrease in testosterone with age, various clinical symptoms and signs associated with testosterone decline, including decreased BMD, are known to occur in elderly men. However, the relationship between testosterone levels and osteoporosis development has been conflicting in human epidemiological studies. Thus, testosterone replacement therapy (TRT) is a useful tool for managing clinical symptoms caused by hypogonadism. Many recent studies support

the benefit of TRT on BMD, especially in hypogonadal men with osteopenia and osteoporosis, although a few studies failed to demonstrate its effects. However, no evidence supporting the hypothesis that TRT can prevent the incidence of bone fracture exists. Currently, TRT should be considered as one of the treatment options to improve hypogonadal symptoms and BMD simultaneously in symptomatic hypogonadal men with osteopenia.

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Sexual dysfunction in Chinese women at different reproductive stages and the positive effect of hormone replacement therapy in the early postmenopause

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Objectives: The aims of the study were to investigate female sexual dysfunction (FSD) at different reproductive stages and the effect on FSD of hormone replacement therapy (HRT). Methods: Participants (N = 524) were divided into six groups according to the Stages of Reproductive Aging Workshop (STRAW + 10): reproductive age (R), early (ET)/late (LT) menopausal transition, early (EP)/late (LP) postmenopause and early postmenopause in women using HRT (EP-HRT; oestradiol sequentially combined with dydrogesterone). The Female Sexual Function Index (FSFI) was used to assess FSD. Univariate and multivariate logistic regression analysis was carried out to predict FSD risk factors. Results: There was an increase in FSD in groups EP and LP, but not in groups R, ET and LT; most FSFI scores were lower in groups EP and LP than in groups R, ET and LT ($p < .05$). There was no difference in FSD between groups EP and LP, but lubrication and pain scores were higher in group EP ($p < .05$). The prevalence of FSD was lower in group EP-HRT; most FSFI scores were higher in group EP-HRT compared with group EP as control ($p < .05$). Further risk factors for FSD were identified as neutral and dissatisfied marital relations, lower educational level and smoking ($p < .05$). Conclusion: We report a clear association between deteriorating sexual function and increasing STRAW + 10 classification, suggesting the consequence of decreasing ovarian function. HRT containing 'natural hormones' was shown to have a beneficial effect on FSD. The results are reported here for the first time in Chinese women.

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Examining the effects of ovarian hormone loss and diet-induced obesity on Alzheimer's disease markers of amyloid-β production and degradation

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After menopause, women experience declines in ovarian sex hormones, an event that has recently been associated with increased amyloid-β peptides, a main feature of Alzheimer's Disease. Diet-induced insulin resistance also increases amyloid-β peptides; however, whether this process is exacerbated with ovarian sex hormone loss remains unknown. Female C57BL6/J mice received either bilateral ovariectomy (OVX; n=20) or remained intact (n=20) at 24 weeks of age and were placed on either a low or high fat diet (LFD; n=10 for OVX and intact, HFD; n=10 for OVX and intact) for 10 weeks. Independently, OVX led to increases in the amyloidogenic marker, sAPPβ. The HFD in combination with OVX, led to lower insulin degrading enzyme (IDE) protein content and activity in the prefrontal cortex, indicative of decreased amyloid-β degradation, however no differences in amyloid-β content were observed. Data from this study provide novel evidence of independent effects of peripheral insulin resistance and ovarian sex hormone loss in decreasing brain markers of amyloid- β degradation. Furthermore, findings indicate how the loss of ovarian sex hormones can promote the formation of amyloidogenic APP cleavage products, independent of diet-induced insulin resistance.

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A prospective study of the relationships between change in body composition and cardiovascular risk factors across the menopause

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Objective: Menopause increases the risk of cardiovascular disease (CVD) which in part has been attributed to the rise in cholesterol and blood pressure (BP). This study examined the hypothesis that menopausal changes in body composition and regional fat depots relate to the change in CVD risk factors. Methods: A prospective recall study was

designed to capture premenopausal women to be re-examined soon after menopause. A total of 97 women from the Oxford Biobank underwent dual x-ray absorptiometry, blood biochemistry, and BP readings pre- and postmenopause. Results: Despite minimal changes in body weight over the 5.1 ± 0.9 year follow-up period, there was an increase in total fat mass and a decline in lean mass, where the proportional change of regional fat mass was the greatest for the visceral fat depot (+22%, $P < 0.01$). Plasma ApoB (+12%, $P < 0.01$) and C-reactive protein (+45%, $P < 0.01$) increased as did systolic (+7%, $P < 0.001$) and diastolic BP (+5%, $P < 0.001$). Plasma nonesterified fatty acids decreased (-20%, $P < 0.05$) which may reflect on a change in adipose tissue function across the menopause. PCSK-9 decreased (-26%, $P < 0.01$) which suggests a compensation for the postmenopausal reduction in low-density lipoprotein receptor activity. Using multilinear regression analyses the changes in ApoB and diastolic BP were associated with visceral fat mass change, but this association was lost when adjusted for total fat mass change. Conclusion: The increase in CVD risk factor burden across menopause may not be driven by changes in body composition, rather by functional changes in end organs such as adipose tissue and liver.

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Correlation between physical activity and cardiovascular risk factors in postmenopausal women from Colombia Caribbean

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Postmenopausal period disturbances are more frequently observed in women with unhealthy lifestyles, insufficient physical activity is related to increased cardiovascular risk (CVR). There is a lack of evidence-based information on physical activity in postmenopausal women and its relationship with CVR factors, including D vitamin serum levels. Objective: To determine the physical activity level in postmenopausal women from the Colombia Caribbean and establish relationships between the physical activity and biochemical and anthropometric CVR factors. Methods: A correlational descriptive study in which 183 postmenopausal women were linked for convenience sampling. Level of physical activity (International Physical Activity Questionnaire) and their relationships with anthropometric variables, blood pressure, lipid profile, glycemic and serum vitamin D were evaluated. Results: According to the physical activity, 82.5% of women were classified as inactive, 9.3% as insufficiently active and only 8.2% as physically active. Physical inactivity was significantly related to higher glucose, triglycerides, and total cholesterol serum levels ($P < .05$). The prevalence of the women with vitamin D levels less than 30 ng/mL were of 69.9%. The women physically active and with eutrophic nutritional condition had more high levels of vitamin D. Conclusions: 82.5% of the postmenopausal women evaluated were physically inactive and this condition was associated with higher serum levels of glycemic, total cholesterol and triglycerides. Serum vitamin D concentrations were higher in traffic and physically active women.

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Calcium Supplements and Risk of Cardiovascular Disease: A Meta-Analysis of Clinical Trials

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Background: Recent systematic reviews and meta-analyses of randomized, double-blind, placebo-controlled trials (double-blind, placebo-controlled RCTs) have reported controversial findings regarding the associations between calcium supplements on the risk of cardiovascular disease (CVD). This meta-analysis aimed to investigate the association between them. Methods: We searched PubMed, EMBASE, the Cochrane Library, and the bibliographies of relevant articles for double-blind, placebo-controlled RCTs in November, 2020. Relative risks (RRs) with 95% confidence intervals (CIs) for the risk of cardiovascular disease were calculated using a random effects model. The main outcomes were CVD, coronary heart disease (CHD), and cerebrovascular disease. Results: A total of 13 double-blind, placebo-controlled RCTs (n = 28,935 participants in an intervention group and 14,243 in a control group)) were included in the final analysis. Calcium supplements significantly increased the risk of CVD (RR 1.15, 95% CI 1.06-1.25], I2 = 0.0%, n = 14) and CHD (RR 1.16, 95% CI 1.05-1.28], I2 = 0.0%, n = 9) in double-blind, placebo-controlled RCTs, specifically in healthy postmenopausal women. In the subgroup meta-analysis, dietary calcium intake of 700-1000 mg per day or supplementary calcium intake of 1000 mg per day significantly increased the risk of CVD and CHD. Conclusions: The current meta-analysis found that calcium supplements increased a risk of CVD by about 15% in healthy postmenopausal women.

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Estrogen receptor α: a critical role in successful female cognitive aging

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Due to potential health risks, current recommendations are that individuals who wish to use hormone therapy to treat menopausal symptoms do so for the shortest period of time possible. In our investigation into how short-term use of estrogens in midlife following loss of ovarian function exerts long-term effects on female cognitive aging in rodents, we discovered a link between the ability of previous exposure to estradiol to enhance memory in the long term and its ability to increase estrogen receptor α (ERα) levels in the hippocampus, a brain area important for memory. Follow-up studies in model systems implicate a role for ERα in enhanced cognitive function independent of ovarian or exogenously administered estrogens. Results are consistent with clinical studies in which brain ERα levels in older women and men are related to cognitive functioning and risk of cognitive decline is associated with polymorphisms in the gene that transcribes ERα. Research in preclinical models reveals mechanisms through which ERα can be activated and affect cognition in the absence of ovarian estrogens, including ligand-independent activation via insulin-like growth factor-1 signaling and activation by brain-derived neuroestrogens. This report reviews preclinical and clinical data that collectively point to the importance of ERα in cognition and highlights the need to differentiate the role of estrogen receptors from their classical ligands as we seek approaches to facilitate successful cognitive aging.

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Milk proteins and their derived peptides on bone health: Biological functions, mechanisms, and prospects

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Bone is a dynamic organ under constant metabolism (or remodeling), where a delicate balance between bone resorption and bone formation is maintained. Disruption of this coordinated bone remodeling results in bone diseases, such as osteoporosis, the most common bone disorder characterized by decreased bone mineral density and microarchitectural deterioration. Epidemiological and clinical evidence support that consumption of dairy products is beneficial for bone health; this benefit is often attributed to the presence of calcium, the physiological contributions of milk proteins on bone metabolism, however, are underestimated. Emerging evidence highlighted that not only milk proteins (including individual milk proteins) but also their derived peptides positively regulate bone remodeling and attenuate bone loss, via the regulation of cellular markers and signaling of osteoblasts and osteoclasts. This article aims to review current knowledge about the roles of milk proteins, with an emphasis on individual milk proteins, bioactive peptides derived from milk proteins, and effect of milk processing in particular fermentation, on bone metabolism, to highlight the potential uses of milk proteins in the prevention and treatment of osteoporosis, and, to discuss the knowledge gap and to recommend future research directions.