Aim: This study was investigated the effects of treadmill running speed and duration on bone mechanical strength in female mice.

Methods: Forty female ICR mice aged 3 months divided into 4 groups (LS, LL, HS, HL) randomly. All subjects were run on a treadmill at the speed of 8 (LS and LL), or 16 m/min (HS and HL), for 25 min (LS and HS) and 50 min (LL and HL), 5 days/week for 3 months, respectively. After running, the blood lactic acid level (LA) was measured. Bone mechanical strength (BMS) of the left femur and tibia were measured by the three-point bending test. The bones were weighted (BM), and burned to ash, and measured ash contents (AC). Data were analyzed by two-way ANOVA and Scheffe's procedure to find the effects of the running speed and duration on bone parameters. A significance level of $p=0.05$ was set. This study was carried out in accordance with the Guide for Animal Experimentation, Hiroshima University and the Committee of Research Facilities of Laboratory Animal Science, Hiroshima University school of Medicine.

Results: All the parameters of the femur and tibia showed the significance in the running duration except for BM of femur. 50 min running significantly increased these bone parameters, compared with 25 min running. BMS of tibia in the running speed of 16 m/min was significantly higher than that in the running speed of 8 m/min. LA in 50 min running groups were significantly higher than that in 25 min running groups.

Conclusions: Treadmill running increased BMS, BM, and AC. This effect was determined by the running duration rather than the running speed, and 50 min running groups were more effective on BMS, BM, and AC than 25 min running groups at the speed of 8 and 16 m/min. In addition, it was considered that the intensity for treadmill running of more than 3.0 mM of average LA level was needed to increase BMS, BM, and AC effectively.

A. Minematsu, None.

246M

Postmenopausal osteoporosis and weight gain

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Background: Recent studies have found weight gained during menopause increase the risk of high blood pressure, the diabetes, heart disease, and has been strongly linked to increased incidence of breast and other hormone-related postmenopausal malignancies. These healthcare concerns have led to the conception of specific products that target menopausal weight gain.

Aim: Looking over weight gain and osteoporosis treatment in climacteric.

Material and methods: 20 Women who were 44 to 58 years old have been recruited. BMI was increased to age. Those with an intact uterus have moderate to severe vasomotor symptoms associated with the menopause, moderate to severe symptoms of vulvar and vaginal atrophy and risk of postmenopausal osteoporosis. They were ascribed to equal two 10 women groups. One group was assigned to 2 mg drospirenone/1 mg 17 beta-estradiol hemihydrate. The other group treated with 40 mg soybean.

Results: In the women on 2 mg drospirenone/1 mg 17 beta-estradiol hemihydrate medication decreased, moderate to severe symptoms of vulvar and vaginal atrophy vasomotor symptoms associated with the menopause in regard to the other group treated with 40 mg soy bean. They had weight main loss of 3 kg in 1 year ($P<0.05$).

Conclusions: Human HRT is in relation to decrease osteoporosis. It is not noted 17 beta-estradiol is in relation to breast cancer. Estradiol is the same oestrogen produced by the ovaries before menopause. Drospirenone has the unique property of reducing water retention often associated with the use of oestrogen and other synthetic gestagenic steroids. The only one with this added advantage. The impact of obesity on hormone replacement therapy is due to many women associate hormones with weight gain. This late medication formula can be beneficial in minimizing uncomfortable symptoms, such as weight gain, hot flashes, night sweats, and mood swings, associated with the natural progression of a woman's life cycle. So, it is due to conduct one great try to make clear and more comprehensible these points.

A. Bazarra-Fernández, None.

247M

Secondary fracture prevention measures in orthopedic wards in Belgium

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Objective: In-hospital diagnosis of osteoporosis in fracture patients in the orthopedic wards is lower than 10% and the prescription rate of treatments is less than 5%. The present report describes the efficiency of a secondary prevention program in Fracture patients in Orthopedic Wards (FORWARD) in a Belgian hospital care setting.

Methods: Orthopedic surgeons willing to participate in the program were requested to refer their patients with clinical fractures for bone densitometry and an osteoporosis specialist's advice.

Results: In 36 hospitals data were collected about 4116 fracture patients. Females represented 73.5% of the population. Fracture prevalence increased until the age of 80 to 85 years, with mean age of 78 year in women and 74 years in men. Most of the fracture cases were hospitalized (88%) and the main fracture type included in the program was hip fracture (45%). Previous clinical fractures were reported in 21% of the patients. 9% had previous DXA examination or concomitant osteoporosis treatments and

were therefore excluded for DXA referral. Appointments for DXA examination were made in 66% (n=2718) of the patients and results were obtained from 53% (n=2181). The diagnostic classification was as follows: osteoporosis 56%, osteopenia 33% and normal bone density 11%. Nearly all cases were referred for diagnostic confirmation of the problem by an osteoporosis specialist, mainly rheumatologists and physiotherapists. Final clinical diagnosis of osteoporosis was accepted in 39% of the cases. Treatment with calcium and vitamin D was started in 1303 patients (31%), with bisphosphonates in 888 patients (21%) and with SERMs or others drugs in 108 patients (<3%). No data about compliance to these treatments were obtained in the present project.

Conclusion: The active referral by orthopedic surgeons of the fracture patients in the orthopedic ward to DXA units and osteoporosis specialists results in the identification of osteoporosis in 39% of the patients. Implementing effective measures and treatments for (secondary) fracture prevention in this high risk population could lead to cost-savings in the short term. Initiatives to promote the patient flow needs to be elaborated and maintained by an active local care organisation.

J. Devogelaer, None.

248M

Gene therapy, down syndrome and osteoporosis

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Background: Individuals with Down syndrome have significantly lower pelvic and spinal bone mineral density. It was shown to be a risk factor for low volumetric bone mineral density in lumbar spine, and for diminished bone strength relative to the loads that the femoral neck must bear. Because the chances of having a baby with Down syndrome increase with the age of the mother, many health care providers recommend that women over age 35 have prenatal testing for the condition. Testing the baby before it is born to see if he or she is likely to have Down syndrome allows parents and families to prepare for the baby's special needs. Sometimes the only strategics to Down syndrome is abortion, so that death.

Statement of purpose: Determining worlwide osteoporosis in individuals with Down syndrome.

Statement of method: A bibliogrphy review is performed in a worldwide basis.

Summary of results: Down syndrome is the most common cause of mental retardation. Results show lower bone mineral density in young adults with mental retardation than in an age-matched reference population. Factors associated with low bone mineral density included small body size, hypogonadism, and Down syndrome in both genders. Down syndrome, which occurs due to trisomy of chromosome 21 and is associated with a distinct skeletal phenotype, including shortened stature, compression of the cervical vertebrae, incomplete closure of the cranial sutures, decreased BMD and an increased prevalence of osteoporosis.

Conclusions: Because morbidity following fracture is likely to be more serious in this population, further investigation of osteoporosis and prevention strategies for both osteoporosis and fractures are important. Active lifestyle and increased physical exercise to improve muscular strength should be instituted to avoid the development of osteoporosis in Down syndrome patients. The quality of life can be improved by routine, systematic health care screening to identify treatable diseases that may be missed because of poor communication or confusion due to, meanwhile gene therapy is to be developed performing intrauterus replacement of stem cell.

A. Bazarra-Fernández, None.

249M

Case report of strontium ranelate related increase in trabecular thickness at the iliac crest measured by microCT

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Introduction: Strontium Ranelate (SR) is promoted as treatment for osteoporosis with a dual mechanism on bone remodeling. BMD increases under Sr therapy are partially due to SR deposition in bone. Only few in vivo microstructural studies or human histological data have been reported. We present a case with remarkable changes in trabecular thickness (Tb.Th), architecture, mineralization and bone turnover following 12m SR treatment.

Materials: We investigated baseline and follow up iliac crest biopsies from a 69 years old. osteoporotic female patient treated with SR for 12 months following bisphosphonates. DEXA measurements and plasma biochemical bone markers were acquired. Bone volume fraction (BV/TV), structural parameters and bone tissue density were measured using microtomography (μCT). To quantify the degree of mineralization, quantitative backscattered electron imaging (qBEI) was performed while X-ray fluorescence microanalysis (XRF) was conducted to determine SR content in the bone biopsies. Semiquantative histology was used to assess trabecular structure, collagen orientation, osteoid surfaces, and bone remodeling.

Results: μCT data revealed a 60.6% increase in BV/TV due to a 31.9% increase in Tb.Th. Mean tissue density measured by μCT increased by 15% to 1192 mgHA/cm^3, with peak densities up to 1500 mgHA/cm^3. qBEI showed an increase in mean hard tissue mineralization by 9.8%. SR content in the mineralized tissue amounted to 2.45 wt.% after treatment. BMD at the femoral neck and lumbar spine increased by 6% and 4%, respectively. No further fractures were reported. After 12m SR treatment bone markers were at the lower end of the normal range, comparable to baseline. Histology showed thickened trabeculae with an endostal apposition between 50 and 90 μm