

WORLD CONGRESS
ON OSTEOPOROSIS,
OSTEOARTHRITIS AND
MUSCULOSKELETAL
DISEASES

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AbstractBook

as the corresponding area on the left leg. The reflexes were present and equal. There was some weakness in the right limb proximally. The Laseque test was positive. The MRI report revealed normal anatomy of the lumbar spine. However, a hypertensive signal from the right ovary was detected. The patient was consulted by gynecologist. Endometriosis of the right ovary was diagnosed. After a course of treatment of endometriosis, the pain syndrome disappeared completely.

Discussion: Endometriosis is a chronic, progressive disease characterized by the proliferation of tissue similar in structure and function to the endometrium, but located outside the uterine cavity. The pressure of growing endometrioid tissue into nerve fibers, especially in the Douglas space could be one of the mechanism of pelvic musculoskeletal pain.

Conclusion: Physicians should be aware of somatic pathology as part of the evaluation of musculoskeletal pain. Endometriosis can be accompanied by myofascial pain syndrome, that's why the identification of causes of pain always requires a detailed analysis of complaints, anamnesis of the patient's life and diseases, general somatic, neurological and orthopedic status.

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STIMULATION-DRIVEN BIOSYNTHESIS AND TRAFFICKING OF THE CALCIUM-SENSING RECEPTOR

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The calcium-sensing receptor (CaSR) is a GPCR receptor that regulates serum calcium homeostasis by controlling the level of circulating PTH. The impairment of CaSR activity and expression cause hyperparathyroidism disorders that lead to calcium/PTH imbalance. It appears that the CaSR, once activated, is able to stimulate the membrane recruitment of newly synthesized CaSR receptors and in general its biosynthesis, by mechanisms that are still unclear and require further proofs.

With the present study we aim to understand how CaSR activation triggers its own biosynthesis and trafficking, and whether this is further enhanced by its pharmacological stimulation.

We are investigating the changes in CaSR expression and activity via RT-qPCR, western blot, IP-one and intracellular calcium mobilization assays, using healthy bovine and human adenoma parathyroid cells and cell lines stably transfected with CaSR-expressing vectors, i.e., HEK^{CaSR}, HT29^{CaSR}, Caco2^{CaSR}, PTHC1^{CaSR-HA} and PTHC1^{CaSR-CFP}. With the transfected PTHC1, the only known parathyroid cell line, we will be able to: i) monitor CaSR biosynthesis and membrane trafficking through live cell imaging; ii) CaSR activity by assessing PTH secretion; iii) assess the interaction of the CaSR

with down-stream signaling factors via immunoprecipitation and further discover novel interacting proteins through mass spectrometry and confocal analysis.

Our preliminary data show that in the HEK^{CaSR}, HT29^{CaSR} and Caco2^{CaSR} cells, 24h stimulation with 1 μ M of cinacalcet increases CaSR mRNA and protein levels by 2-fold compared to untreated control, while inhibiting the CaSR with 1 μ M of NPS 2143 reduces CaSR expression.

Based on our preliminary results, we suggest the existence of a feedback mechanism that promotes CaSR biosynthesis upon its stimulation. Commonly, GPCRs internalize after activation, causing thus desensitization, whereas the CaSR seems to guarantee a sustained signaling by recruiting newly synthesized CaSR receptors on the cell surface. Exploiting this mechanism will allow us to improve current pharmacological treatments for hyperparathyroidism disorders.

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BONE MARKERS IN PERIMENOPAUSAL AND POSTMENOPAUSAL WOMEN WITH ABNORMAL UTERINE BLEEDING

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Objective: To determine the histopathological changes of the endometrium that occur during the period of perimenopause and postmenopause and to determine their association with the presence of obesity and the levels of bone markers for bone resorption and bone formation, serum parathormone, vitamin D and calcium levels.

Methods: This study involved 120 patients with fractionated explorative curettage due to abnormal uterine bleeding. The examined group was divided in two subgroups: 60 women in perimenopausis and 60 women in postmenopause. Anamnestic data were taken from all respondents. Body height and weight were measured. This laboratory analyses were performed: Serum Osteocalcin, beta CTX, parathormone, Vitamin D and calcium levels.

Results: The most common pathological change of the endometrium was an endometrial polyp. History of previous bone fractures was significantly more common in postmenopausal women than in perimenopausal women. Postmenopausal women were older than perimenopausal and had significantly higher BMI, higher levels of serum osteocalcin and beta CTX in serum. Postmenopausal duration significantly positively correlated with osteocalcin and β -CrossLaps serum values. Higher serum osteocalcin and

β -CrossLaps values were measured in patients with longer postmenopause duration. There was not significant difference in the levels of vitamin D and calcium between the groups.

Conclusion: In the period of perimenopause and postmenopause, there are changes in the genital organs, but also there are internal disorders (obesity, metabolic syndrome, diabetes, thyroid disorders, cardiovascular disease, osteoporosis), which should be timely prevented, diagnosed and treated. Estrogen deficiency in postmenopause is the most common cause of postmenopausal osteoporosis.

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RISK OF OSTEOPOROTIC FOREARM FRACTURES IN POSTMENOPAUSAL WOMEN AGED OVER 55 YEARS

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Objective: To assess the frequency of osteoporotic forearm fractures (OFF) in women aged over 55 y and their association with risk factors for chronic non-communicable diseases (NCD).

Methods: The study was based on the material from the Russian arm of the HAPIEE project (Novosibirsk). The design of present work is cross-sectional study. In a subsample of postmenopausal women aged 55-84 years old (n=2005) we assessed the history of OFF during the last 3 y, risk factors for fracture and common NCD, socioeconomic parameters, and blood lipids and glucose. Cross-sectional analysis of association between history of OFF and their potential determinants was conducted using multivariable-adjusted logistic regression. Statistical analysis was processed using the SPSS (v.13.0)

Results: A history of OFF was found in 3.9% women. The frequency of OFF in the last 3 y did not differ in women with DM2 (3.0%) and without DM2 (4.3%), $p=0.218$. In age-adjusted analysis, the risk of OFF in postmenopausal women was positively associated with history of past smoking (OR=2.29; 95%CI 1.13–4.65), total cholesterol >200 mg/dL (OR=2.03; 95%CI 1.25–3.41), and negatively associated with BMI (OR=0.92; 95%CI 0.87–0.97). In multivariable adjusted analysis, these relationship remained significant and the risk of OFF was positively associated with a history of past smoking (OR=2.23; 95%CI 1.10–4.55), elevated total cholesterol value >200 mg/dL (OR=1.98; 95%CI 1.19–3.29), and negatively associated with BMI (OR=0.91; 95%CI 0.86–0.96) regardless of other factors.

Conclusion: In the studied Siberian population sample of postmenopausal women aged 55–80 years old, the frequency of osteoporotic forearm fractures during the last 3 y was 3.9%. The cross-sectional determinants of OFF were smoking in the past and high total cholesterol value; BMI value was inversely related to the risk of osteoporotic fractures. The identification of mutual risk factors suggests deep relationships between pathways of NCD and osteoporotic fracture development. The obtained data might have implications for fracture prevention in postmenopausal women.

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MINERAL BONE DENSITY, TRABECULAR BONE SCORE AND FRAX® IN POSTMENOPAUSAL WOMEN WITH AND WITHOUT DIABETES MELLITUS

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Objective: To study the indicators of BMD and TBS and to assess the 10-y fracture risk (FRAX®) in women with diabetes mellitus type 2 (DM2).

Methods: The study included 103 postmenopausal women aged 58-84 y with and without DM2. In studied group of women, 52 women had DM2 (25 indicated a history of osteoporotic fracture (OF), 27 without a fracture), 51 women were without diabetes (26 with a history OF, 27 without OF). The design this work is case-control study. All persons were examined with assessment of fracture risk and risk factors by the FRAX score, anthropometry, DXA, determination of TBS. Statistical analysis was processed using the SPSS (v.13.0)

Results: Women with DM2 in groups with and without fractures didn't differ in terms of fasting blood glucose ($p=0.681$) and duration of menopause ($p=0.214$), but the history of DM2 was longer in women with fractures ($p=0.028$) compared to those without fractures. We did not find the difference by the site of fractures in individuals with and without DM2.

Among women with DM2, those with a history of OF had significantly lower T-scores in the femoral neck ($p=0.039$) than women without OF. The frequency of osteoporosis according to densitometry among women with DM2 and OF was insignificantly higher than in those without OF: 36.4% and 16.0%, respectively ($p=0.148$). The frequency of osteoporosis according to densitom-