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TITLE.

OSTEOCYTE-SECRETED PROTEINS AND BONE MINERAL DENSITY IN WOMEN WITH AMENORRHEA

AUTHOR/S.

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ABSTRACT.

Objective. To evaluate osteocyte-secreted proteins and molecular-genetic markers in relation to bone mineral density in women with amenorrhea. Materials and Methods. 110 women with amenorrhea living in Russian Federation enrolled in the cross-sectional study. Levels of reproductive hormones, osteocyte-secreted proteins were evaluated, as well as DXA. SNPs were genotyped by PCR for SOST (sclerostin) (rs1107748), LEPR (leptin receptor) (rs1805094, rs8179183). Results. Low bone mineral density (BMD) (Z-score?-2.0) in L1-L4 was found in 33.6% of women with amenorrhea (23.2% in premature ovarian insufficiency, 47.5% in hypogonadotropic amenorrhea, 45.5% in gonadal dysgenesis, 46 XX); in femoral neck - in 8.9% (all cases refer to hypogonadotropic amenorrhea). Sclerostin (Scl) in women with amenorrhea was lower than in postmenopausal women (p=0.02), osteoprotegerin (Opg) in POI was higher in normal vs. low BMD (p=0.02), RANKL in gonadal dysgenesis was lower in normal vs. low BMD (p=0.04). There was a moderate positive correlation of Scl to the age of beginning of amenorrhea (p=0.04) and a moderate negative correlation of Opg to the duration of amenorrhea (p=0.01). ROC-analysis showed levels of Opg (AUC 0.759±0.089, sensitivity 87.8%, specificity 69.2%, cut-off 1.6 pmol/l, p=0.001) and RANKL/Opg ratio (AUC = 0.672±0.081, sensitivity 92.3%, specificity 51.0%, cut-off 0.07, p=0.002) to be diagnostic markers of low BMD in these patients. T/T genotype in SOST (rs1107748) was associated with 3-fold increase in risk of low BMD in femoral neck ($p<0.05$); C/C genotype in LEPR - with 3-fold increase in risk of low BMD in L1-L4 ($p<0.05$). Conclusion. The age of beginning of amenorrhea and its duration influence the concentration of osteocyte-secreted proteins and BMD. Several SNPs of genes coding SOST and LEPR have shown to influence risks of low BMD in different skeletal sites.

INSTITUTE.

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