# P302. Screening for osteoporosis in amenorrheic and postmenopausal women

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Context: Menopause and secondary amenorrhea is usually associated with bone loss. Objective: To work out non-instrumental screening for low bone mineral density (BMD) in amenorrheic and postmenopausal women. Methods: Patients. 54 women with secondary hypothalamic amenorrhea (HA), 55 with premature ovarian insufficiency (POI) and 191 postmenopausal women (without metabolic syndrome and prior HRT) were enrolled in cross-sectional study. Interventions. We evaluated BMI, BMD (by DXA), levels of reproductive hormones, markers of bone and lipid metabolism. SNPs of genes regulating differentiation and function of bone cells and adipocytes (COL1A1, CYP19A1, ESR1, ESR2, LEP, LEPR, LRP5, TNFRSF11B, RANKL, SOST, VDR, PPARG, FTO, INS) were assessed by PCR. Main Outcome Measures. Correlation analysis and logistic regression analysis were performed. Results: 48.2% of women with HA and 23.6% with POI had low BMD. There were positive correlations between BMI and BMD in all groups. We worked out a screening for low BMD in women with amenorrhea: y=2.67+0.22*(duration of amenorrhea, years)-0.29*(BMI)+0.74*(atherogenic index). AUC 0.79 (95%CI 0.68-0.89), p<0.001. Probability (P)>50% (y>0) -high-risk group (Sp=85%, PPV=70%); P<27% (y<-1,0) -low-risk group (Se=87%, NPV=88%). The probability of postmenopausal osteoporosis: y=6.65-0.07*(body mass, kg)-0,97*(LEPR, rs8179183) + 0,56*(RANKL, rs9594759). AUC 0.75 (95%CI 0.68-0.82), ?=3*10-9. y>0 -high-risk group (Sp=73%, PPV=85%); y<-1,0 -low-risk group (Se=97%, NPV=83%). We found a significant influence of LEPR (rs8179183) on BMD in underweight women with HA and postmenopausal women with obesity (p<0.05). Conclusions: Significant associations of bone and fat were found in women with estrogen deficit of different age - with the key role of leptin receptor, connecting reproductive system, fat and bone, that led to new screening approaches.

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