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The association of LEPR rs1137101 polymorphism with the incidence of left ventricular hypertrophy in patients with obstructive sleep apnea and hypertension

P. Sobieraj[1], P. Bielicki[2], R. Plywaczewski[3], K. Brzoska[4], M. Barnas[2], M. Kumor[2], L. Jonczak[3], T. Stepkowski[4], A. Piechuta[2], R. Chazan[2], P. Sliwinski[3], M. Kruszewski[4]

[1]Medical University of Warsaw, Department of Internal Medicine, Hypertension and Vascular Diseases, Warsaw, Poland; [2]Medical University of Warsaw, Department of Internal Medicine, Pulmonary Diseases and Allergy, Warsaw, Poland; [3]Institute of Tuberculosis and Lung Diseases, 2nd Department of Respiratory Medicine, Warsaw, Poland; [4]Intitute of Nuclear Chemistry adn Technology, Centre for Radiobiology and Biological Dosimetry, Warsaw, Poland

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Background/Introduction: Obstructive sleep apnea (OSA) is one of the most common respiratory disease which is considered as a risk factor for cardiovascular disease and death. Although coexistence of OSA and arterial hypertension may be attributed to well-known common environmental risk factors for both diseases, a genetic background should be considered. LEPR rs1137101 polymorphism was reported to be associated with coronary artery disease and heart failure. Left ventricular hypertrophy is a part of hypertension-mediated organ damage assessment and an independent risk factor for adverse outcome in patients with hypertension.

Purpose: This study is aimed to establish the relationship between LEPR rs1137101 polymorphism and left ventricular hypertrophy in patients with OSA and arterial hypertension.

Methods: Consecutive patients with newly diagnosed OSA confirmed by polysomnography underwent genotyping for the single nucleotide polymorphisms of LEPR (rs1137101).

LVH was diagnosed using standard 12-lead electrocardiogram according to the current European Society of Cardiology guidelines. Logistic regression was used to assess the relationship between LEPR rs1137101 polymorphisms and LVH.

Results: From 600 subjects diagnosed with OSA, 427 subjects with hypertension were included for further analysis (25.1% women, 74.9% men). In analyzed subpopulation mean age was 58.5±9.4 years, body mass index 33.7±6.6 kg/m^2, apnea-hypopnea index 43.1±23.6/hour. In 34 (8.0%) subjects LVH was diagnosed. Genotyping revealed, that 123 (28.8%) subjects were LEPR rs1137101 AA homozygotes, 202 (47.3%) LEPR rs1137101 A/G heterozygotes and 102 (23.9) LEPR rs1137101 G/G homozygotes.

Logistic regression showed, that LEPR rs1137101 A/A polymorphism vs A/G and G/G was associated with increased risk of LVH (odds ratio: 2.08, 95% confidence interval: 1.02–4.25, p=0.03). The relationship was significant also after adjustment for age, sex, apnea-hypopnea index and current smoking status (odds ratio: 2.28, 95% confidence interval: 1.08–4.83, p=0.03).

Conclusions: Our study shows a possible link between the polymorphism of the LEPR rs1137101 polymorphism and LVH in patients with OSA and arterial hypertension.