ASSOCIATION OF POLYMORPHIC VARIANT OF THE GENE *ADRB2* (C79G) WITH THE DEVELOPMENT AND COURSE OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Abstract

The *aim* was to study the possible associations of polymorphic variants of genes *ADRB2* (A46G) (rs1042713), *ADRB2* (C79G) (rs1042714), *NR3C1* (C646G) (rs41423247), *MDR1* (C3435T) (rs1045642) with the risk of development and severity of chronic obstructive pulmonary disease (COPD) in patients with or without the obesity.

Material and methods. 100 patients with COPD aged 40 to 87 years were enrolled. Concomitant obesity was detected in 48 patients, no obesity — in 52 patients. The control group consisted of 40 subjects.

Results. The association was revealed between polymorphic gene variant GG *ADRB2* (C79G) and risk of COPD development [$\chi 2$=6,38, p=0,012; OR=2,96 (95%CI:1,24-7,06)], and between polymorphic variant gene CG *ADRB2* (C79G) and risk for obesity [$\chi 2$=7,97, p=0,0048, OR=3,44 (95%CI:1,44- 8,26)]. The increase in body mass index, body fat ratio, visceral fat level in obese patients with COPD compared to non-obese patients with COPD were accompanied by simultaneous increase of muscle performance only in the presence of G allele of the gene *ADRB2* (C79G) in homo- or heterozygous state. Improvement of lung function (increase in FEV1, FEV1/FVC and FEV1/OFV6) was noted only in CG genotype gene *ADRB2* (C79G) patients. In patients with COPD without obesity polymorphic variant gene GG *ADRB2* (C79G) was associated with negative change in CAT score [$\chi 2$=5,06; p=0,0245] and negative or zero change in BODE index [$\chi 2$=15,57; p = 0,0001].

Conclusions. Evaluating the frequency of polymorphic variants of genes *ADRB2* (A46G and C79G), *NR3C1* (C646G), *MDR1* (C3435T) in COPD obese/non-obese patients a significant association with the development and course of the disease was detected only for a polymorphic variant (C79G) of gene *ADRB2*.

Key words: chronic obstructive pulmonary disease, obesity, polymorphic genetic markers, *ADRB2* (A46G and C79G), *NR3C1* (C646G), *MDR1* (C3435T).

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