

**USE OF POLYMORPHIC VARIANTS OF *ADRB2*, *NR3C1*, *MDR1*  
GENES FOR PERSONALISED ADMINISTRATION  
OF COMBINED THERAPY WITH INHALED CORTICOSTEROIDS  
AND LONG-ACTING  $\beta_2$ -AGONISTS IN PATIENTS WITH  
CHRONIC OBSTRUCTIVE PULMONARY  
DISEASE**

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*Abstract*

The *aim* was to study the feasibility of use of polymorphic variants of *ADRB2* (A46G and C79G), *NR3C1* (C646G), *MDR1* (C3435T) genes for predicting the effectiveness of therapy with inhaled corticosteroids/long-acting  $\beta_2$ -agonists in patients with chronic obstructive pulmonary disease (COPD).

*Methods.* We examined 60 patients with COPD, whose maintenance therapy consisted of inhaled corticosteroids/long-acting  $\beta_2$ -agonists (ICS/LABA). CAT (COPD Assessment Test) and BODE index were used for evaluation of patients' condition.

*Results.* In ICS/LABA patients with no improvement in terms of CAT score high frequency of genotype GG (100%) was observed. A significantly [ $\chi^2 = 7,05$ ;  $p = 0.0079$ ] different trend was registered in group of patients with improvement, in which the genotype GG was never met. In patients with no improvement according to BODE index GG genotype was found in 72,73 % of cases, as opposed to 6,12 % in patients with improvement. The difference was statistically significant [ $\chi^2 = 22,35$ ,  $p = 0,00001$ , OR = 40.89 (95% CI: 6,98-239,49)]. In genotypes combinations analysis it was found that the association of genotype GG for *ADRB2* (C79G) gene and TT genotype for *MDR1* (C3435T) gene was significantly [ $\chi^2 = 21,16$ ;  $p = 0.00001$ ] more common in patients with a decreased BODE index.

*Conclusion.* The improvement on ICS/LABA therapy in COPD patients with genotypes CC and CG for gene *ADRB2* (C79G) and higher rate of treatment failure in patients with genotype GG for *ADRB2* (C79G) gene validated the use of polymorphic marker (C79G) for *ADRB2* gene as an additional prognostic marker of ICS/LABA treatment efficacy.

**Key words:** personalized therapy, inhaled corticosteroid/long-acting beta agonist, chronic obstructive pulmonary disease, *ADRB2* (A46G and C79G), *NR3C1* (C646G), *MDR1* (C3435T).

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