EVALUATION VALUES OF SPIROMETRY TESTS IN RELATION TO BETA-2 ADRENERGIC RECEPTOR GENE POLYMORPHISM

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A special role in the control of the respiratory system activity plays a vagus nerve that represents parasympathetic part of autonomic nervous system. On the other site, it is observed a very faint bronchial innervations by the sympathetic system, although, a significant simultaneous expression of adrenergic receptors, in particular b2, is present in the whole airways. The development of genetics and molecular biology allows for detailed study what can clarify the essential elements of pathogenesis of many types of lung diseases as well as the physiological phenomena - bronchial smooth muscle tonus and their contraction mechanism. The study involved 148 healthy male volunteers aged from 20 to 26 years. In all subjects, the gene polymorphism at nucleotide position 46 and 79 of b2-adrenergic receptor (b2-ADR) was assessed. According to the gene polymorphism data, we divided the whole examined population of males into 6 particular groups for further studies. Moreover, in all the subjects, we performed the spirometry testing to verify their pulmonary functions.

The basic values of spirometry tests in all subjects were in range of normal values. The frequency of different genotypes in the gene polymorphism of b2-adrenergic receptor at nucleotide positions 46 and 79 were typical for the Caucasian population. Analysis of the output values of spirometry, conducted in the particular groups on the basis of their genotype, showed significant differences in the selected spirometry tests. Our results may be useful to explain the differences in measured values of spirometric indices in healthy subjects in relation to polymorphism of b2-ADR as well as may contribute to the verification of standards for spirometric indices for this selected group of young males in polish population.