Significance of genetic polymorphism of CYP2D6 in the pathogenesis of systemic sclerosis

Małgorzata Barańska¹, Bożena Dziankowska-Bartkowiak², Elżbieta Waszczykowska², Mariola Rychlik-Sych¹, Jadwiga Skrętkowicz¹

¹Department of Pharmacogenetics, Medical University of Lodz, Muszyński 1, PL 90-151 Lodz, Poland
²Department of Immunodermatology, Medical University of Lodz, Krzemieniówka 5, PL 94-017 Lodz, Poland

Correspondence: Małgorzata Barańska, e-mail: malgorzata.baranaska@umed.lodz.pl

Abstract: Systemic sclerosis (SSc) belongs to the group of systemic diseases of the connective tissue, which are characterized by a chronic autoimmune inflammatory process. The studies on etiopathogenesis of autoimmune diseases focus on the impact the genetically conditioned impairment of xenobiotic metabolism may exert. The genetically polymorphic CYP2D6 is one of the most important phase I drug metabolizing enzymes. The knowledge of oxidation polymorphism in the course of SSc may be helpful in choosing more efficient and safer therapy, particularly in the case of a disease involving various organs and treated with drugs belonging to diverse therapeutic groups. The aim of the study was to evaluate the CYP2D6 polymorphism in the SSc patients and to investigate a possible correlation with disease susceptibility.

Methods: The study was carried out in 77 patients with SSc and 129 healthy volunteers. The CYP2D6 genotypes were analyzed by polymerase chain reaction fragment length polymorphism (PCR-RFLP) method.

Results: Risk of SSc development for particular genotype carriers expressed by the odds ratio (OR) was statistically significantly higher for subjects with CYP2D6*1/CYP2D6*4 (OR = 3.2; p = 0.001). A statistically significant correlation between the CYP2D6*4 allele prevalence and the risk for developing SSc was found (OR = 1.6; p = 0.029).

Conclusions: The obtained results may suggest the influence of CYP2D6*4 gene mutated alleles on increased incidence of systemic sclerosis.

Key words: genetic polymorphism, oxidation, CYP2D6, systemic sclerosis (SSc)