ABSTRACT

Keywords: nephrotic syndrome, FSGS, MCD, podocin, *NPHS2*, *VEGF* polymorphisms

Nephrotic syndrome (NS), caused by minimal change disease (MCD) and focal segmental glomerulosclerosis (FSGS) has about 20% of the genetic background caused by mutations in the *NPHS2* gene encoding protein podocin that plays an important role in the kidney filtration barrier. The aim of this work is to introduce mutation analysis of the *NPHS2* gene and to examine the sample of Czech patients with NS. We examined 71 patients with FSGS/MCD and subsequently, on the basis of these data we tested two common polymorphisms in *NPHS2* (p.R229Q and p.P20L) in the group of patients with different glomerulonephritides (GN): IgA nephropathy (IGAN) (n = 169), membranous GN (MGN) (n = 46) and control group (n = 300). We also examined two polymorphisms located in the promoter of vascular endothelial growth factor (VEGF) (-2578 A/C, -1154 A/G) and influencing the level of its expression. VEGF is produced by specialized kidney cells called podocytes and has a function in the formation of blood vessels and capillary fenestration. The sample included 56 patients (pts) with FSGS/MCD, 113 pts with IGAN, 44 pts with MGN and 311 controls. No mutation in *NPHS2* gene was found in patients with FSGS/MCD arising in adulthood. We detected one homozygous mutation p.V290M in patient with FSGS which occurred in the third year of life and a previously undescribed heterozygous variant p.G97S in non-conserved region of the *NPHS2* gene with an unclear significance in patient with FSGS since childhood. In one patient the combination of polymorphisms was found. The frequency of p.R229Q polymorphism in patients and controls has been around 10%. Regarding polymorphisms of *VEGF*, no significant impact on disease progression was confirmed. We suggested slightly negative effect of the CC genotype -2578 C/A polymorphism on the clinical course of MCD/FSGS.