Functional polymorphisms in transforming growth factor-beta-1 (TGF-1) and vascular endothelial growth factor (VEGF) genes modify risk of renal parenchymal scarring following childhood urinary tract infection

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Abstract:

Background. The risk of renal scar formation following urinary tract infection (UTI) varies markedly between individuals. We sought to investigate a possible role of the common polymorphisms in the gene encoding for VEGF and TGF-1, key regulators of tissue repair, in renal scarring. Methods. Acute pyelonephritis was diagnosed in 104 children (63 males) aged 2 months to 12 years by urine culture and 99Tc-DMSA renal scan. A follow-up isotope scan was performed 4–6 months later to identify new renal scar formation. Vesicoureteral reflux (VUR) was examined by micturating cystourethrogram. Controls comprised 300 healthy children with no evidence of renal disease. Three single-nucleotide polymorphisms (SNPs) in the TGF-1 (800 A/G, 509 C/T and 869 C/T) and four SNPs in the VEGF gene (2578 C/A, 1154 G/A, 460 T/C and +405 G/C) were genotyped in all subjects. Results. Forty-six of the 104 patients developed renal parenchymal scarring (44.2%). VUR was found in 35.6%. The 509 T allele in the TGF-1 promoter was significantly more common in cases with renal scarring (51%) than in non-scarring patients (22.4%) and controls (23.6%) (both P

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