

Role of TGF- β 1 Gene Polymorphism in Childhood Urinary Tract Infection and Vesicoureteral Reflux

Hyung Eun Yim · In Sun Bae · Kee Hwan Yoo · Young Sook Hong · Joo Won Lee

Department of Pediatrics, College of Medicine, Korea University Seoul, Korea

Background : Renal parenchymal damage after urinary tract infection (UTI) and reflux nephropathy may lead to chronic renal failure in children and young adults. Vesicoureteral reflux (VUR) has known to be related with genetic background. Several inflammatory mediators including TGF- β 1 have been implicated in initiating and regulating parenchymal damage leading to renal scarring. This study was designed to investigate whether the genetic polymorphism of TGF- β 1 was associated with the susceptibility to UTI · VUR, and subsequent renal scarring.

Methods : We recruited 89 controls, 79 UTI, and 58 VUR children who were treated in Korea University Hospital. Patients with UTI and VUR were classified into two groups according to the evidence of scarring, respectively. The genotypes of C-509T and G-800A polymorphisms in the TGF- β 1 gene were analyzed by using polymerase chain reaction- restriction fragment length polymorphism (PCR-RFLP). Renal scarring was evaluated with technetium-99m dimercaptosuccinic acid renal scan.

Results : Compared to the control group, the -509CC genotypes significantly increased in the both UTI and VUR group (control, 8.8; UTI, 34.6; VUR, 36.2%; $p < 0.001$). Also, -800GG genotypes significantly increased in the both UTI and VUR group than control (control, 19.1; UTI, 40.5; VUR, 40.4%; $p < 0.05$). In the UTI group, -509 TT and -800GA genotypes were decreased than control (-509 TT, control, 41.3; UTI 24.4%; $p < 0.05$; -800GA control, 80.9; UTI, 59.5%; $p < 0.01$). No significant differences were observed in the genotype distribution of C-509T and G-800A TGF- β 1 polymorphisms between the scar-positive and scar-negative group.

Conclusion : There is a high association between the TGF- β 1 -509CC and -800GG genotypes and the susceptibility to UTI and VUR. But renal scar formation is not related to C-509T and G-800A TGF- β 1 polymorphisms.