Genetic Polymorphism of IL-8-251 Among Pediatric Patients With Urinary Tract Infection

BACKGROUND AND OBJECTIVE: Urinary tract infection (UTI) in children is characterized by a variety of clinical manifestations. A potential cause of different phenotypic responses is a genetically heterogeneous immune response. In view of the central role of interleukin-8 (IL-8) in the pathogenesis of UTI, the IL-8 gene polymorphism may be an important factor in determining the UTI phenotype. The objective was to study the frequency of polymorphic variants of the gene encoding IL-8 in children with UTI and the impact of polymorphism of IL-8 on the pathology.

METHODS: The study included 60 patients aged 3 to 18 years with UTIs. The control group consisted of 30 children without clinical symptoms of UTI and without anamnestic data about renal dysfunction. Materials for molecular genetic analysis were DNA samples, which were isolated from the urine. Nucleotide polymorphism detection estimated the carrier alleles of IL-8-251A, followed by determination of genotype A/A, A/T, and T/T. We performed statistical data processing by using the program package Statistica 6.0 (StatSoft, Tulsa, OK).

RESULTS: Nosologic groups were formed: 15 children with acute cystitis, 24 with acute pyelonephritis, and 21 with chronic pyelonephritis. Analysis of the distribution of genotypes demonstrated that the normal genotype of IL-8-251 TT was found in 36.6% ± 6.2% of patients and the heterozygous phenotype of IL-8-251 AT was found in 60.0% ± 6.3%. Compared with the control group, we detected a significant difference ($P < .0005$) in the distribution of genotypes: Genotype IL-8 251 TT was found in 66.6% ± 12.1% of children in the control group, IL-8-251 AT in 33.4% ± 12.1%. A positive association between the genotype IL-8-251 AT and UTI occurrence was established: RR = 2.8; $\chi^2 = 9.6$, $P < 0002$. Analysis of gene polymorphisms of IL-8 (251 AT) based on the clinical forms of UTI showed that the most common (71.4% ± 9.8%) was found in patients with chronic pyelonephritis ($P < .0005$), whereas in patients with cystitis it was found in 46.6% ± 12.8%.

CONCLUSIONS: Heterozygous genotype IL8-125 AT can be used as a criterion for the onset and course of UTI. Identification of prognostic criteria of UTI phenotypes in children, taking into account the genotypic polymorphism of IL-8, requires additional study.

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Renal Bladder Ultrasonography and Late 6-Month DMSA Scan Screening for High-Grade Vesicoureteral Reflux After First Febrile Urinary Tract Infection in Infants Aged <1 Year

BACKGROUND AND OBJECTIVE: The best approach for radiologic investigation in a child after the first febrile urinary tract infection (UTI) remains contentious. Many advocates agree that the detection of high-grade vesicoureteral reflux (VUR) is important because of the increased risk of recurrent UTI and renal scars. The objective was to study the ability of renal bladder ultrasonography (RBUS) and late 6-month technetium-99 dimercaptosuccinic acid (DMSA) renal scans to detect high-grade VUR after first febrile UTI in infants aged <1 year.

METHODS: A total of 387 infants aged <1 year with first febrile UTI who completed the diagnostic follow-up of RBUS, voiding cystourethrography (VCUG), and late 6-month DMSA scan were enrolled in the study. The ability of RBUS and late 6-month DMSA scan to detect high-grade VUR, including cost and benefit, was assessed.

RESULTS: RBUS findings were abnormal in 95 (24.5%) infants. VUR was found by VCUG in 79 (20.4%) infants, which was high grade (grade IV–V) in 8 (2.1%) infants. Abnormal renal parenchyma, including renal scars, was identified by late 6-month DMSA scan in 22 (5.7%) infants. The sensitivity of abnormal RBUS and late 6-month DMSA scans in detecting high-grade VUR was 50% and 87.5%, respectively, and unnecessary VCUG was reduced by 75.5% and 94.3%, respectively. Abnormal RBUS had higher sensitivity in detecting abnormal DMSA scan than normal RBUS (68.2% and 31.8%, respectively).

CONCLUSIONS: Fifty percent of high-grade VUR and 31.8% of abnormal late 6-month DMSA scans were not detected by RBUS screening after a first febrile UTI in infants. Although abnormal late 6-month DMSA scans had higher sensitivity and specificity in detecting high-grade VUR and the ability to detect renal scars, the benefit of this method was limited because of its high cost and radiation exposure.

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Molecular Basis of α-Thalassemia in Qatari Pediatric Population

BACKGROUND AND OBJECTIVES: α-Thalassemia is a microcytic anemia characterized by the downregulation of α-globin synthesis. Premature destruction of red blood cells in the bone marrow ensues, resulting in deficient erythropoiesis. Mutations in the globin gene resulting in quantitative or structural changes in the globin chain can be caused by

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