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The level of urinary endothelin in patients with urinary reflux

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ABSTRACT

Background: In different tissues, the endothelin is produced by vascular endothelium. They are potent vasoconstrictor peptides. There is a little information about the role of endothelin in reflux nephropathy.

Objectives: The aim of this study is to evaluate urinary levels of endothelin in patients with vesicoureteral reflux (VUR).

Patients and Methods: It was a cross-sectional study that conducted on 81 children who received voiding cystourethrogram (VCUG). Based on VCUG reports, patients were divided into two groups; with reflux (40 persons) and without reflux (41 persons). We got a urine sample from patients with mid-stream or urine bag method. The endothelin level was assessed with ELISA immunoassay. Data was analyzed using SPSS 16.

Results: Based on VCUG reports, 40 patients (49.4%) had urinary reflux, of them 20 cases suffered from unilateral urinary reflux and others from bilateral. Of 40 patients with reflux, 23 cases (57.5% of reflux group) had kidney scar and seven individuals (17.5%) had abnormal kidney sonography. Of patients with urinary reflux, 13 cases (32.5%) had grade1 urinary reflux, 8 cases (20%) grade 2, and 5 cases (12.5%) grade 3 and finally 14 cases (35%) grade 4. The UET-1 levels were significantly higher in VUR patients compared to the control group ($P < 0.001$). Comparison of mean endothelin levels between two groups was done using Mann-Whitney U test and was statistically significance ($P < 0.001$). We used Kruskal-Wallis for comparison of endothelin levels in different grades of reflux ($P < 0.001$).

Conclusions: Urine endothelin-1 level can be considered as an alternative to VCUG for screening vesicourethral reflux.

Implication for health policy/practice/research/medical education:

Urine endothelin-1 level can be considered as an alternative to VCUG for screening VUR. According to significant changes in the different grades of reflux, it is helpful in determining the severity of VUR. It can at least prevent performing unnecessary VCUG in low-risk patients.

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1. Introduction

Vesicoureteral reflux (VUR) exists in one third of children with febrile urinary tract infection, and has been connected with an increased risk of renal scarring (1). Renal injury associated with VUR creates renal infections in children or renal mal-development

during fetal life and may cause hypertension and chronic renal failure. Early diagnosis and rapid medical or surgical treatment are advised to prevent renal damage. In the past, voiding uretrocytogram was used for diagnosis of all children with urinary tract infections who received long-term antibiotic

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