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Urinary Tract Infection and Diagnosing Vesicouretheral Reflux in Children: A Short Communication

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About the Study

Vesicouretheral Reflux (VUR) is the most common anomaly of the urinary system in childhood. In asymptomatic children, the frequency of VUR is unknown; it is around 1% in the general population. Smaller children are more susceptible to reflux due to the relatively shorter submucosal section of the ureter. In children with a Urinary Tract Infection (UTI), the frequency of VUR is quite high. This study shows on the importance of ITU in diagnosing VUR in children.

Vesicoureteral Reflux (VUR) often cannot be diagnosed directly, because there are no pronounced clinical symptoms. It is mainly caused by a congenital anomaly of the ureter, whereby the urine returns through the ureters to the renal ducts and calyces [1]. It is revealed through the consequence a UTI. The clinical findings varies from almost asymptomatic UTI to severe pyelonephritis [1,2]. At a younger age, infections and anomalies of the urinary system are more common [3]. The existence of the bacteria in significant numbers in children's culture of urine repeatedly, without specific signs of infection, refers to possible VUR in the background [1,3]. The children with VUR, in addition to UTI, can have asymptomatic bacteriuria, sometimes with only lumbar pain when urinating or retention of urine in the bladder [2,3]. In infants, the symptoms are mostly non-specific. VUR is represented at a younger age with nonspecific symptoms, such as fever, diarrhea, vomiting, lack of progress in growth and development, while in the newborn period it manifests with hyperbilirubinemia, weight loss, and convulsive attacks [3]. The basis for febrile UTIs in earlier life is often VUR; up to 40%of UTIs have pronounced VUR [4].

Vesicoureteral reflux is a significant medical problem from prenatal to adulthood. It has no specific symptoms; it is often diagnosed early in life during regular ultrasound examinations during pregnancy, or later with acute or recurrent UTI [4]. Undiagnosed and untreated VUR leads to the formation of kidney scars and a decrease in kidney function, which can progress to chronic kidney disease [2,4]. The early infancy and the period of a small preschool child are the most common period when VUR is diagnosed [3,4]. This can be explained by more frequent screening examinations and also by more frequent UTI in that period of life. Infants are still in diapers and do not control the act of micturition itself. The widespread use of pre- and postnatal ultrasound examination helps to the discovery of a large number of children with asymptomatic hydronephrosis [5]. Most hydronephrosis is detected in the 18th-20th week of gestation and the frequency of fetal hydronephrosis is about 2%, if the diameter of the drip >5 mm is used as a criterion. The frequency of clinically significant hydronephrosis is thought to be around 1:600 newborns [6]. Despite numerous researches, it is still not fully known or defined how pronounced the dilatation in cm or mm must be, to represent a real obstruction and to require operative treatment [4,2]. Pyeloureteic stenosis of the ureter and VUR are the most common findings in the dilatation of the kidney canal system. However, VUR is diagnosed more often in boys, compared to girls 5:1, while pyeloureteric stenosis of the ureter is found more often in girls compared to boys, 3:1 [1,4,6].

VUR is diagnosed by the children mostly, due to the occurrence of UTI, which is present in over 85% of patients. Also, VUR can be found during the diagnostic workup of children with hydronephrosis, proteinuria, asymptomatic bacteriuria, hypertension or chronic kidney disease [3,4,6].

Less of 48% of children with VUR have symptoms of UTI, such as elevated temperature, CRP and leukocytes, and pathological findings in the urine, and positive urine culture finding.

It is known that children with a high degree of VUR, degrees IV and V, and UTI are 4-6 times more prone to develop renal scars than those with lower degrees of reflux (I-III), and 8-10 times more than those without UTI [4-6].

VUR disturbs the physiological function of the ureter, in addition to the pressure of the so-called "shock wave" on the kidney tissue; bacteria are also transferred to the upper parts from the lower parts of the urinary system. It is the most important cause of febrile UTI in infancy and in a younger age of children, can lead to scarring of the renal parenchyma and progression of chronic kidney disease. Undiagnosed and untreated VUR leads to the permanent consequences, the emergence of hypertension and chronic kidney disease in adult age, so that every UTI in children should be given special attention. Based on the available date, we need further studies for better diagnosing and treatment of UTI and VUR in children. There is still much room for the detection and prevention of VUR development.

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