Congenital Malformations of the Renourinary System — Risk Factors for the Development of Urinary Tract Infections, a Screening That is Required to Be Performed

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Urinary tract infection (UTI) is the most commonly diagnosed bacterial infection in infants and children, with a significant consequence on the quality of life and health [1]. Congenital urinary tract abnormalities are the most common cause of UTI in children. The most frequent kidney abnormalities encountered during childhood are: obstructions of urinary tract (urethral valves, ureteropelvic and ureterovesical junctions' obstructions), and dysfunctional voiding (vesicoureteral reflux) [2]. Primary vesicoureteral reflux (VUR) has an incidence of 20–60% among children with urinary tract infection. An early diagnosis of VUR is very important, as its missing recognition or a delayed diagnosis can lead to reflux nephropathy (RN) referring to renal scarring, as a cause of chronic renal failure in 5–40% of children aged below 16 years [3]. An antenatal screening with an accurate diagnosis followed by an immediately postnatal abdominal ultrasound made that these malformations to be diagnosed early [4] and decrease the number of urinary tract infections and their recurrences. Thus, since the neonatal period we can decide which child will be further monitored, which will receive medical treatment and which will require surgery [4].

Recently, a group of investigators from the local Pediatric Clinic compared the patients admitted between 2006–2008, when neonatal ultrasound screening of congenital malformations of the urinary system has been performed, with the period of 2003–2005, when this screening has not been performed and they noticed a decreased incidence of UTI and their recurrences between 2006–2008 [5]. In another study, conducted in our region during the same 3-year period (2006–2008), when all fetuses were diagnosed antenatally with different degrees of hydronephrosis, then followed-up postnatally at 3 and 6 months old, only 15.15% (5 of 33) of them required surgical treatment because of their high degree hydronephrosis with kidney damage. The remaining infants had transient and mild hydronephrosis or VUR, which required only medical treatment.

In the study conducted by Moreh et al on 432 children, the authors demonstrated that vesicoureteral reflux and obstructive uropathies are most the frequent kidney abnormalities related to urinary infections [5]. Silimar results were obtained in an Italian study, where 17.783 children were screened over a 12 months period, and a congenital kidney malformation was found in 171 cases, from these VUR was encountered in 39 cases, while ureteropelvic junction obstruction in 33 cases [7]. In another study performed in China, the authors observed that the most widespread congenital kidney abnormalities were congenital hydronephrosis and ureterovesical junction obstruction [8]. Most of the studied cases (62.5%) had at least one, usually more UTI episodes in their history [5]. Additionally, the study of Moreh et al emphasized the high incidence of UTI among patients with a preexisting congenital kidney malformation (26.7%), and the diagnosis of 41 patients before the first episode of UTI was considered a success, because a correct diagnose and follow-up can prevent chronic pyelonephritis [5]. In this study, the incidence of UTI was higher in male newborns and infants, while in toddlers and children it was higher in females [5]. Regarding the sex of patients with renourinary congenital malformations who also had urinary tract infection, they observed the predominance of females, explained by the anatomy of the genitalia in girls [5].

It is well known that the first renal scar may occur even after the first episode of urinary tract infection, so the prognosis of children with congenital malformations and urinary tract infection may be deteriorated [4,5]. Therefore, to improve the prognosis of these patients, an early diagnosis of these malformations through a program of antenatal and postnatal screening, with an appropriate follow-up is required [4,5,6].

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