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Congenital anomalies of urogenital system at children

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The analysis of 588 clinical reports of children with urogenital system pathology treated in Nephrological and Urological units of the Pediatric Centre SBI RS(Y) RH №1 – NCM for 2012-2014 was carried out in this research. The structure of congenital anomalies of urinary system in children is established for the first time.

Keywords: congenital anomalies, urogenital organs, children.

Introduction. Congenital anomalies (CA) of urogenital system (UGS) appear to be serious a medical-social problem as they cause the development of urinary tract infection (40-80%) [5, 7], up to the development of chronic renal failure (65%) [1, 4, 6]. CA of UGS refer to a list of the most frequent congenital anomalies which are included in the International defects register which are subject to genetic monitoring (International Birth Defects Monitoring System, Eurocat). According to the incorporated register EUROCAT and the register of the Russian Federation for 2000-2010 UGS defects occupy 3rd place (15,17 and 17,18% accordingly) in the structure of the leading congenital anomalies [2].

In the structure of UGS various cases of obstructive pathology (hydronephrosis, ureterhydronephrosis, gidrokalikoz) rating 12-17% of all CA UGS [5] are considered the most prevalent. In pediatrics vesicoureteral reflux (VUR) is noted as one of the most common congenital anomalies as well, its morbidity rating 35-64,5% at children with urinary infection. As a result of this complication reflux nephropathy is observed at 30-60% of children with VUR [3].

Thus, because of high incidence rate of the urogenital system and its great influence to the structure of infantile death rate, infantile morbidity and physical disability it is necessary to study the given problem firstly from the point of view of prevention, early diagnostics.

The aim of the research: to establish a structure of congenital anomalies of urinary organs at children.

Materials: Clinical records of 588 children from 1 month to 17 years with congenital anomalies of urogenital system for 2012-2014 are studied. Examination of children was conducted in nephrological and urological units of the Pediatric center of the State Budgetary Institution RS (Ya) RB №1 – NCM according to medical-economic standards of the investigation of children with urogenital system pathology.

Results and discussion: 588 children were involved in the survey, including 189 (32,1%) of them from 1 month to 12 months, 98 (16,7%) from 1 to 3 years and 301 (51,2%) of them 3 years old and over. Among them there were 245 (41,7%) girls and 343 (58,3%) boys. Out of all inpatient children 328 (55,7%) children were from Yakutsk and 260 (44,2%) were from rural areas. Among the rural children the greatest number of children were from Hangalassky (12%) and Mirninsky (7,7%) regions. As for ethnicity there were 361 (61,4%) Yakuts, 198 (33,6%) Russians and 29 (5%) of children of other nationalities.

The analysis of the clinical records showed that during the studied period 479 children with isolated and 109 children with combined congenital anomalies of urogenital system were examined. In the structure of the isolated anomalies of UGS vesicoureteral reflux (34,4%) and hydronephrosis (35,7%), and pyelocaliceal system enlargement (a piyeloectasia, calycectasis) were diagnosed at 7,7% of cases (Tab. 1). Thus, VUR in 37%, and hydronephrosis in 4% of cases had bilateral localization. Besides the isolated anomalies of urogenital system at children the combined anomalies (Tab. 2) were revealed. Among them the leading positions are taken by uretrohydronephrosis (39,4%) and VUR in combination with hydronephrosis (6,4%) and more frequently renal hypoplasia (5,5%). Generally, in dynamics, for 2012-2014 the increase of the total amount of UGS pathology at children by 1,3-1,4 times was noted (29-30% to 41%).

Secondary chronic pyelonephritis is diagnosed at 423 (72%) patients. 24 children (5,6%) had complicated secondary chronic pyelonephritis: wrinkling of kidneys at 6 (25%) patients, chronic renal failure (stages 1 and 3) at 2 (8,3%) children and nephrectomy at 16 (66,7%) patients (concerning hydronephrosis - 12 and PMR - 4).

Conclusion. Thus, on the basis of the obtained data it is possible to make the conclusion that in the structure of anomalies of UGS vesicoureteral reflux (34,4%), hydronephrosis (35,7%), and as well as: uretrohydronephrosis (26,6%), VUR with hydronephrosis (6,4%), VUR with renal hypoplasia (4,6%) appear to be the most frequent cases at children. The urinary infection as a result of urodynamics disorder is registered in 72% of cases of congenital anomalies of UGS. The development of complications (5,6%) which can lead to children's disability is considered to be an important factor as well. Therefore, timely identification and carrying out surgical correction of these uropathy pathologies are needed that will allow to avoid serious consequences at congenital anomalies of urogenital system.

Table 1

The isolated congenital anomalies of urogenital system at children

Type of anomalies	2012 г. n=136		2013 г. n=138		2014 г. n=205		n=479
Vesicoureteral reflux	52	38,2%	40	29%	73	35,6%	165 (34,4%)
Hydronephrosis	52	38,2%	53	38,4%	66	32,2%	171 (35,7%)
Renal agenesis	5	3,7%	2	1,4%	5	2,4%	12 (2,5%)
Renal polycystic	5	8,4%	3	2,2%	5	2,4%	13 (3%)
Renal hypoplasia	6	4,4%	5	3,6%	8	4%	19 (4%)
Renal dystopia	2	1,5%	6	4,3%	4	2%	12 (2,5%)
Horseshoe-shaped kidney	2	1,5%	3	2,2%	3	1,5%	8 (1,7%)



Doubling of kidney	1	0,7%	4	3%	6	3%	11 (2,3%)
Pyelocaliceal system enlargement (pyeloectasia, calycectasis)	6	4,4%	11	8%	20	10%	37 (7,7%)
Ureterocele	2	1,5%	-	-	1	0,5%	3 (0,6%)
Syndrome Frehley	-	-	3	2,2%	-	-	3 (0,6%)
Nephroptosis	-	-	1	0,7%	2	1%	3 (0,6%)
Renal cyst	-	-	1	0,7%	-	-	1 (0,2%)
S-shaped kidney	-	-	1	0,7%	-	-	2 (0,4%)
Renal aplasia	-	-	1	0,7%	2	1%	3 (0,6%)
Vascular anomaly of kidneys	-	-	2	1,4%	3	1,5%	5 (1%)
Urinary fistula	1	0,7%	-	-	-	-	1 (0,2%)
Renal multicyst	2	1,5	-	-	6	4%	8 (1,7%)
Ureter bending	-	-	-	-	1	0,5%	1 (0,2%)
Agenesis of ovary	-	-	1	0,7%	-	-	1 (0,2%)

Table 2

The combined congenital anomalies of urogenital system at children

Types of anomalies	2012 г. n=35		2013 г. n=38		2014 г. n=36		n=109
VUR+doubling of kidney +ureterocele	1	3%	-	-	-	-	1 (1%)
VUR+posterior urethral valve	-	-	-	-	1	3%	1 (1%)
VUR+doubling of kidney	1	3%	1	2,6%	1	3%	3 (3%)
VUR+megaureter	2	6%	1	2,6%	1	3%	4 (3,7%)
VUR+renal hypoplasia	1	3%	3	8%	2	6%	6 (5,5%)
VUR+renal agenesis	-	-	1	2,6%	-	-	1 (1%)
VUR+renal dystopia	-	-	1	2,6%	-	-	1 (1%)
VUR+renal dystopia +renal hypoplasia	-	-	-	-	1	3%	1 (1%)
VUR+doubling of ureter	1	3%	-	-	-	-	1 (1%)
VUR+ Horseshoe-shaped kidney	2	6%	-	-	-	-	2 (2%)
Ureterhydronephrosis +posterior urethral valve	1	3%	-	-	-	-	1 (1%)
Ureterhydronephrosis +posterior urethral valve + VUR	1	3%	-	-	-	-	1 (1%)
Urethrohydronephrosis +VUR	1	3%	2	5,3%	-	-	3 (3%)
Ureterhydronephrosis +doubling of kidney	1	3%	-	-	-	-	1 (1%)
Ureterhydronephrosis	10	28,5%	19	50%	14	39%	43 (39,4%)
Ureterhydronephrosis +ureterocele	-	-	1	2,6%	-	-	1 (1%)
Hydronephrosis+ VUR	2	3%	-	-	5	14%	7 (6,4%)
Hydronephrosis +nephroptosis	2	6%	-	-	-	-	2 (2%)
Hydronephrosis+VUR+renal hypoplasia	-	-	-	-	3	8,3%	3 (3%)
Hydronephrosis + piyeloectasia	-	-	-	-	1	3%	1 (1%)
Hydronephrosis+renal dystopia +renal hypoplasia	-	-	-	-	1	3%	1 (1%)
Hydronephrosis + Renal mulicystosis	1	6,7%	1	5,9%	-	-	2 (2%)
Hydronephrosis + Horseshoe-shaped kidney	2	13,3%	-	-	-	-	2 (2%)
Hydronephrosis +удвоение почки	-	-	1	5,9%	-	-	1 (1%)
Renal hypoplasia+nephroptosis	1	3%	-	-	-	-	1 (%)
Renal hypoplasia+ renal dystopia	2	5,7%	-	-	2	5,5%	4 (3,6%)
Renal dystopia +doubling of kidney	-	-	1	2,6%	-	-	1 (1%)
Renal dystopia + renal hypoplasia	-	-	1	2,6%	-	-	1 (1%)
Renal dystopia +syndrome Frehley	1	3%	-	-	-	-	1 (1%)
Renal dystopia +L-shaped kidney	-	-	2	5,3%	-	-	2 (2%)
Renal agenesis + piyeloectasia	1	3%	-	-	-	-	1 (1%)
Renal agenesis +cyst	-	-	1	2,6%	-	-	1 (1%)



Horseshoe-shaped kidney+ piyeloectasia	-	-	1	2,6%	1	3%	2 (2%)
Horseshoe-shaped kidney + doubling of kidney +renal hypoplasia	-	-	-	-	1	3%	1 (1%)
Syndrome Frehley+ piyeloectasia	-	-	1	2,6%	-	-	1 (1%)
Doubling of kidney +renal dystopia	-	-	-	-	1	3%	1 (1%)
Renal mulicystosis+megaureter	-	-	-	-	1	3%	1 (1%)
Renal agenesis +hydronephrosis	1	3%	-	-	-	-	1 (1%)

Note: VUR - vesicoureteral reflux

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