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OBSTRUCTIVE MEGAURETEROHYDRONEPHROSIS IN CHILDREN

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SUMMARY

Key words: obstructive megaureterohydronephrosis, treatment, children.
Despite the numerous studies dedicated to congenital reno-urinary abnormalities and, in particular, obstructive megaureterohydronephrosis, both in terms of etiopathogenesis and management, it remains an enigmatic and controversial problem.
The spread of congenital renal-urinary malformations in children, including obstructive magaureterohydronephrosis, is of interest through the occurrence of recurrent urinary tract infections, or the destruction of renal parenchyma in time, with chronic kidney failure in children or adolescents. The paper draws attention to the obstructive megaureterohydronephrosis in a child with the association of posterior urethral stenosis. Conservative treatment with satisfactory results is presented. The articlepresents a clinical case with obstructive megauretrohydronephrosis.

РЕЗЮМЕ

ОБСТРУКТИВНЫЙ МЕГАУРЕТЕРОГИДРОНЕФРОЗ У ДЕТЕЙ

Ключевые слова: обструктивный мегауретерогидронефроз, лечение, ребенок.
Несмотря на многочисленные исследования, посвященные врожденным аномалиям развития мочевыделительной системы, в частности обструктивногомегауретерогидронефроза как с точки зрения этиопатогенеза, так и менеджмента, они остаются загадочным и спорным вопросом. Распространенность врожденных аномалий мочевыделительной системы у детей, среди которых особый интерес представляет обструктивныймегауретерогидронефроз, проявляющийся рецидивирующей инфекцией мочевыделительной системы, с прогрессивным, необратимым уменьшением уровня клубочковой фильтрации, обширным рубцеванием почечной паренхимы может привести к почечной недостаточности и даже к терминальной стадии хронической почечной недостаточности у ребенка или подростка. В статье обращается внимание на обструктивныймегауретерогидронефроз на фоне стеноза задней уретры. Представлены принципы консервативного лечения с удовлетворительными результатами. В работе представлен клинический случай обструктивногомегауретерогидронефроза.

REZUMAT

MEGAURETEROHIDRONEFROZA OBSTRUCTIVĂ LA COPII

Cuvinte-cheie: megaureterohidronefroza obstructivă, tratament, copil
În pofida numeroaselor studii care sunt dedicate anomaliilor congenitale renourinare și în deosebi a megaureterohidronefrozei obstructive, atât în privința etiopatogeniei, cât și a managementului, rămân o problemă enigmatică și controversată. Răspândirea malformațiilor congenitale renourinare la copii, printre care și magaureterohidronefroza obstructivă prezintă interes, prin apariția infecțiilor urinare cu caracter recidivant, sau la distrugerea în timp a parenchimului renal, cu instalarea insuficienței renale cronice la copil sau la adolescent. În lucrare se atrage atenția la megaureterohidronefroza obstructivă la un copil cu asocierea stenozei de uretră posterioară. Este prezentat tratamentul conservativ cu rezultate satisfăcătoare. Articolul prezintă un caz clinic cu megauretrohidronefroză obstructivă.

Introduction.
Recent studies show that the latest European Clinical Guide with an imposing number of recommendations issued was not based on good quality clinical evidence, underscoring the need for further clinical trials [1,2]. Modern specialized literature and own studies show that there is an increase of the reno-urinary congenital malformationsin the Republic of Moldova [3].
The treatment of obstructive megaureterohydronephrosis in children is determined by the degree of disorder of urodynamics in the upper urinary tract and by the pathological changes of the renal parenchyma. Nowadays, more and more specialists in the field resort to the conservative treatment of the obstructive primary megaureter, the dilatation of the ureter is determined in the lower third, with an expansion of the renal cavity system, of the renal calyxes, so that the deformity of the ureter disappears, the urodynamic disorderhaving a functional character. According to recent studies, the cause of the obstructive megaureter is the disturbance of the contraction activity of the ureter. The administration of the metabolic, etiopathogenic preparations is directed to improving the functionality of the smooth muscles of the ureters [4, 5].
Studies report that at the end of the first year of life of the child the clinical indices improve significantly with 80-85% in the megaureter of the first stages and in 65% in the advanced stages of the disease. According to many researchers, the criterion of surgical resolution is the progression of the dilation of the upper urinary tract, the reduction of renal function with association of urinary infection (persistent leukocytosis, urea, increased serum creatinine) that does not react positively to the antibacterial treatment [6, 7]. Therefore, in the absence of the regression dynamics of the pathological inflammatory process, the diminution of the dilation of the renal cavity system, of the ureters, despite the different conservative treatment,the surgical treatment will be undertaken [8, 9]. Recent studies show that the repeated severe urinary tract infection, occurring before 1 year of age with urinary disorders, the altered general condition, in case of inadequate treatment, can lead to Acute Renal Insufficiency. The evaluation of the renal malformations will be performed by ultrasonography of the urinary system and dynamic renal scintigraphy, intravenous urography that assesses the degree of impairment of the urinary system, and urinary cystoureterography that confirms or rejects an associated bladder-ureteral reflux and also excludes the presence of a uropathy[10]. The treatment of the given malformative disorders depends on the age of the patient, the type of megaureter, the degree of renal impairment, the character of the associated complications. Treatment includes antibiotic therapy and surgery [11].

The purpose of this study is to highlight aspects related to the clinical features, diagnostic methods and therapeutic possibilities of obstructive megaureterohydronephrosis on the example of a clinical case in a patient aged 11 months.

Material and methods.
We present the clinical case of the child, P.R., 11 months, male, hospitalized in the surgery of the newborn unit, PHIIM and Ch, Natalia Gheorghiu NSPC for Pediatric Surgery, with complaintson subfebrile temperature - 37.8 0 C, changes in the urine test - leukocituria, periodic pururia. From the anamnestic data, we note that at the 37th week of the intrauterine period the child was diagnosed with renourinary congenital anomaly - bilateral pyeloetasis. Birth at IMSP IMșiC. The child from 1-stpregnancy, 1-st monofetal birth, within 40 weeks naturally, from the mother with oligohydramnios, ureoplazma infection. Waist at birth 3620, length - 50 cm. Newborn with cord entanglementaround the neck.

Results.
Ultrasonography of the urinary system performed on the third day after birth revealed the right kidney 44x22 mm, dilation of the kidney pelvis on the right - 20 mm,

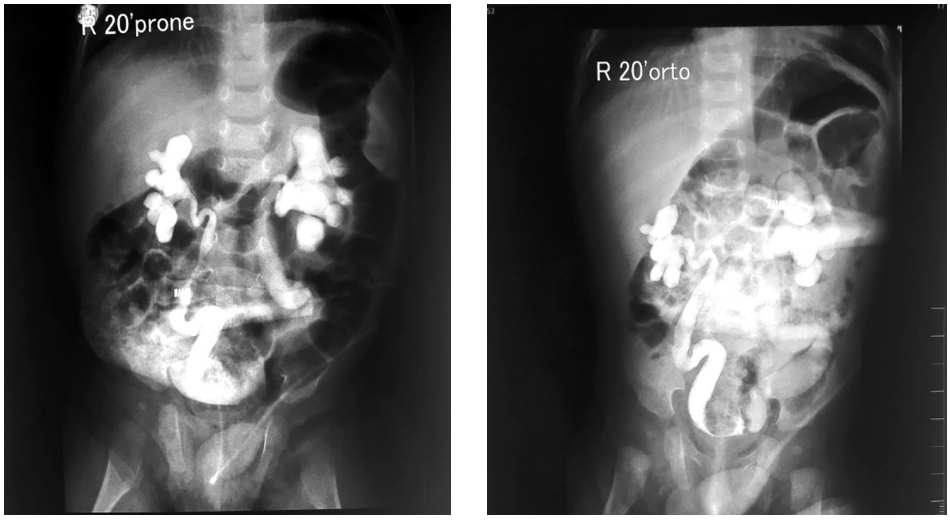

Fig. 1. Patient P.11 months. Megaureterohydronephrosis, II degree on the right, III degree on the left.

calyxes on the right - 16mm, parenchyma on the right - 4 mm. Kidney on the left - 45x24mm, parenchyma on the left - 6 mm. The pelvis on the left 15 mm, the upper calyx 11mm.The child was discharged from the maternity ward, with recommendations to return over a month or as needed. On 16.04.19 the child was transferred by the Avia San Line from DrochiaDistrict Hospital with complaints on fever, the presence of cyanosis of the penis, effortless urination, weight loss, interrupted urinary jet. The child underwent antibiotic therapy, uroseptics, desensitized. At the stage of disappearance of inflammation of the penile gland the child was examined by intravenous urography on 05.05.19, which detected bilateral megaureterohydronephrosis, II degree on the right, III degree on the left *(fig. 1)*.

The patient was examine in dynamics by ascending cystoureterography on 20.05.2019, which determined a bladder with irregular contour, consequence of the stenosis of the posterior urethra with pseudodiverticles, „detrusor hypertrophy" *(fig. 2)*.

It is noted that the radiopharmaceutical has a long retention at the level of calyxes and pelvis. The patient was diagnosed with obstructive megaureterohydronephrosis, II degree on the right, III degree on the left.

In order to normalize urodynamics through the lower urinary tract, a permanent bladder probe of Foley type no. 10 for a period of 5 months, with the change of the latter for the first time after 7 days and the administration of uroseptic preparations according to the scheme (tab. Furagini 0,05 ¼x1 once a day in the evening for 1 month). The monitoring of the condition of the urinary system was performed by the periodic clinical and paraclinical examination of the child once in 3 months by ultrasonography of the urinary system. USG on 17.04.19: Both kidneys edema. Increased echogenicity of renal parenchyma. Unique linear echoes in bilateral pelvis and the bladder. The kidney on the right 74x35mm, the parenchyma 5 mm, the kidney on the left - 74x34mm, the parenchyma 5 mm. Ureter on the upper right 4mm, on the upper left - 5-6mm. The calyx on the right - 13mm, on the left - 15mm. The pelvis on the right - 12mm, on the left - 15mm, the bladder full with double contour, down the bilateral ureter - 4-5mm. Ultrasound data of bilateral megaureterohydronephrosis.

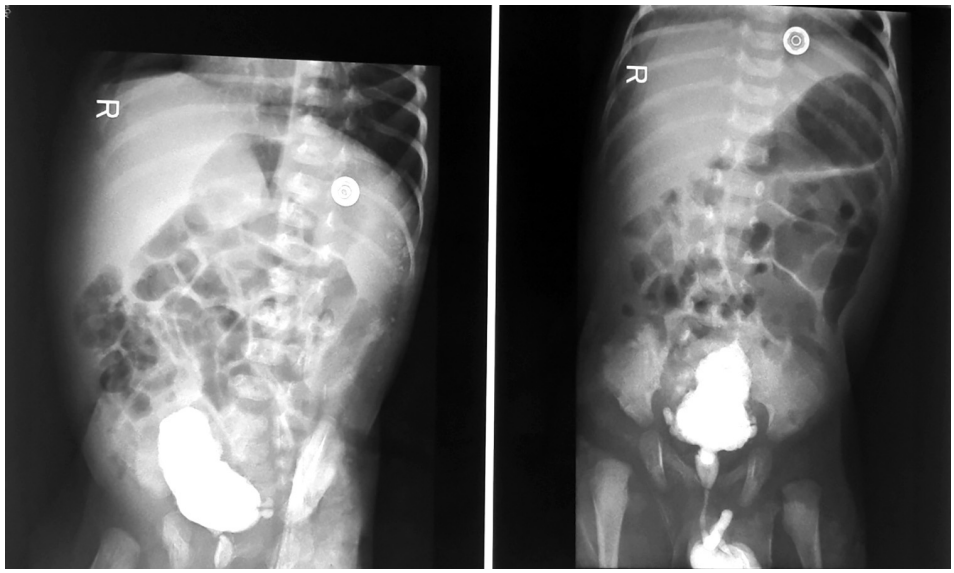

Fig. 2. Patient 11 months. Ascending cystourethrography.Bladder with irregular contour. Stenosis of the posterior urethra. „Detrusor Hypertrophy".

The renal scintigraphy on 03.09.19, indicates to us that the left kidney is visualized in a typical place, with a clear outline and with normal dimensions. The distribution of the radiopharmaceutical in the left kidney is irregular, but the accumulation level of the radiopharmaceutical is normal. At the same time, the glomerular filtration and the evacuation of the radiopharmaceutical was abruptly slowed, of obstructive type.There was a long-term detention of the radiopharmaceutical in the basin and calyxes. The kidney on the right is visualized in the typical place, with a clear outline, with normal dimensions. The distribution of the radiopharmaceutical is irregular.The level of accumulation of the normal radiopharmaceutical, and the mechanisms of glomerular filtration and evacuation of the radiopharmaceutical is abruptly slow - obstructive.

Ultrasonography of the urinary system on 15.09.2019. Kidney on right 67x30mm, kidney on left - 66x28mm, bilateral parenchyma - 8 mm, pelvis on right - 10 mm, pelvis on left 13mm, calyx on right 8mm, calyx on left - 12mm. The urinary bladder is not full, the right ureter - 5-6 mm, on the left - 7-8 mm. Catheter in the bladder.

Neurosonography on 17.04.19. The average cerebral structures are not dilated. The lateral ventricles in the anterior horns 3mm, the ventricle III, the width - 3mm, the cerebral parenchyma of average echogenicity. Signs ofCSP immaturity.

On 08.05.19 an attempt for surgery by posterior transurethral urethrotomywas made. Due to the pronounced urethral stenosis, the operation was not performed. A urethral catheter was installed in the bladder.

Subsequently, the child was hospitalized for performing cystoscopy with anesthesiological assistance on 12.11.19. The cystoscopy detected the bladder with modified structure, of small volume about 30-40 ml, with pseudodiverticles, visible ureteral ostiums, lateralized, visible interureteral bar. After filling the bladder, the cystoscope is withdrawn and the posterior urethra is explored, hypertrophied verummontanum, without obstructive visible posterior urethral valves (*fig. 3*).

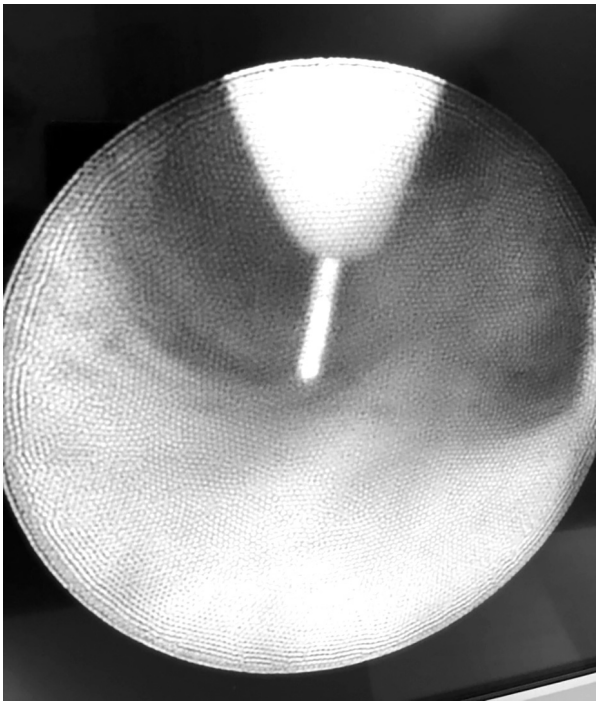

Fig. 3. Cystoscopy. Data of posterior urethral valve have not been determined.

Postoperatively, the urine probe is given up and the supervision of the urinary discharges under treatment with Sol is decided. Oxybutinine hydrochloride 5 mg / 5 ml, 1.0 ml per os administration every 12 hours.

The child was hospitalized on 29.01.20for performing repeated cystoscopy with anesthesiological assistance.

Repeated cystoscopy indicated in the bladder, with much improved appearance, the volume increased to about 80 ml, pseudodiverticles reduced in size and number, barely outlined and almost ureteral holes of quasi-abnormal appearance. The interureteral bar is still projecting, but with improved appearance.Posterior urethra of normal size, hypertrophied verum montanum with sketch of urethral valves at base, but compliant, apparently nonobstructive. Effective urinary jet, good at vitreous pressure, after cystoscope withdrawal Competent external sphincter - closes when cystoscope is withdrawn. Conclusion: Favorable postoperative evolution.

In order to evaluate the pathological process the child was hospitalized in the urology section of PHI IM and Ch, Natalia Gheorghiu NSPC for Pediatric Surgery in a programmed way for the evaluation of the general condition over 1 year after the pathology was detected.

Ultrasound of the urinary system on 11.03.20. Kidney on the right 66x30mm, kidney on the left - 66x31mm, kidney parenchyma on the right 8 mm, kidney parenchyma on the left - 8 mm. Pelvis on the right 3-4mm, pelvis on the left - 9mm, calyx on the right - 2mm, upper ureter on the right - 3mm, upper ureter on the left - 4-5mm. The bladder is not full. Posterior bilateral ureters up to 3-4 mm.

Renal scintigraphy on 12.03.20 The kidney on the left is seen in a typical place, clear contours, in normal dimensions. Distribution of irregular radiopharmaceuticals, low accumulation level. The process of glomerular filtration and evacuation of the radiopharmaceutical suddenly slowed down - obstructive type. Prolonged retention of the radiopharmaceutical in the pelvis and along the moderate ureter. The kidney on the right is seen in a typical place, clear contours, normal dimensions. Irregular radiopharmaceutical distribution, normal accumulation level. The process of glomerular filtration and evacuation of the radiopharmaceutical suddenly slowed down - obstructive type. Prolonged retention of the radiopharmaceutical in the pelvis, and more pronounced in the lower 1/3 of the ureter. (*Fig. 4*).

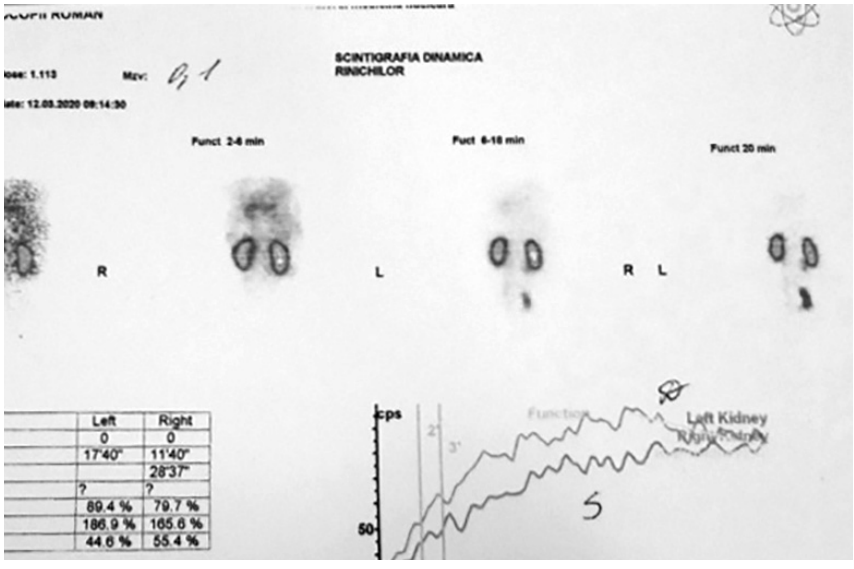

Fig. 4. Renal scintigraphy in dynamics.

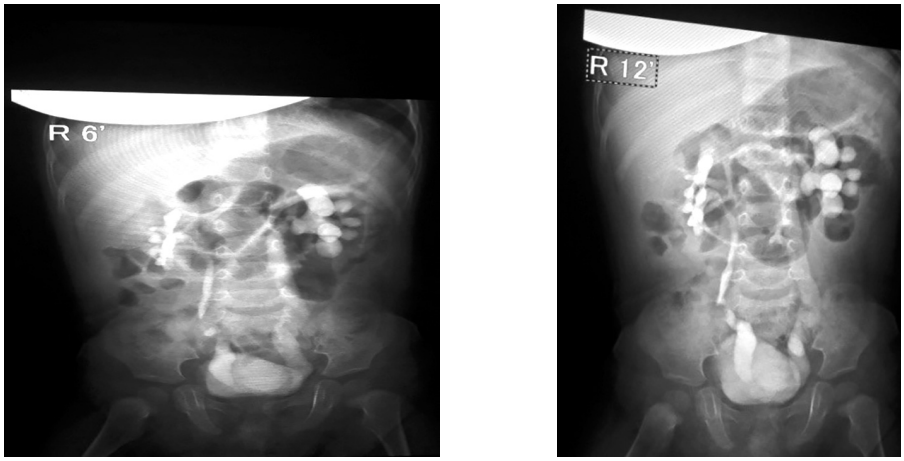

Fig. 5. Ureterohydronephrosis, I degree on the right, II-III degree on the left.

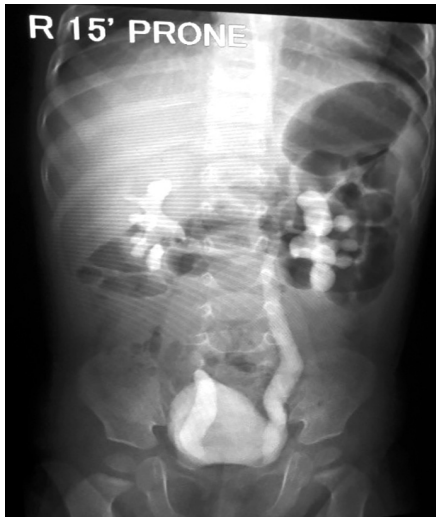

Fig. 6. Ureterohydronephrosis, I degree on the right, II degree on the left.

The child was examined by excretory urography on 11.03.20, which was detected at 6 'bilateral paravertebral on the right at the L1-L3 level, on the left at the Th12-L3 level the pelocaliceal systems are visualized. On the left the pelvis increased in volume, in the projection of the pelvic-ureteral junction a linear filling defect - aberrant vesselis visualized. The calyx stems are dilated on the left. The calyxes are rounded bilaterally (with an emphasis on the left). The ureter on the left was contrasted along the entire path, dilated to 1.5 cm. The ureter on the right dilated in 1/3 distal up to 1.3cm. Low, ectopic implantation of the ureters bilaterally with hypotonia of the ureters is detected. Negative orthostatic test. The left evacuation function is diminished (*fig. 5-6*).

Conclusion. Ureterohydronephrosis, I-II degree on the left. Bilateral hydrocalicosis (with emphasis on the left). Megaureter on the right (I-II degree). Pyelonephritis. Radiological picture, in comparison with the urography on 07.05.2019, with positive dynamics.

The child was examined by urinary cystoureterography on 17.03.20. Well-contrasted bladder with clear outline, round shape. The bladder-ureteral reflux is not detected. On the left a small diverticulum of the bladder is seen. Valve stenosis of the urethra with suprastenotic dilation (*fig. 7*). Positive radiological dynamics.

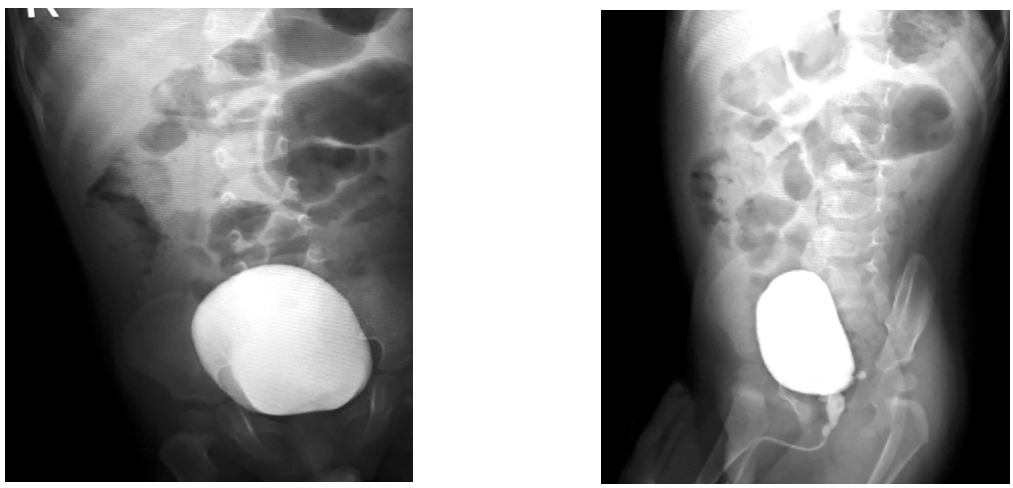

Fig. 7. Mycological cystoureterography Bladder-ureteral reflux is not determined.

The child underwent treatment with Sol. Atropine 0.01% no. 10, subcutaneously, simultaneously the child followed electrophoresis with Sol. Atropine 0.01% no. 10, in the bladder. Subsequently, the child underwent physiotherapeutic treatment with laser therapy in the bladder region for 10 days. Positive effect. The volume of the bladder has increased.

Discussions.

The treatment of neurogenic bladder dysfunction occupies a primordial place in urology. Considering the difficult pathogenesis, the treatment of neurogenic dysfunction of the bladder of hypertonic, hyperreflective type remains a current problem and a special attention is paid to pharmacotherapy. Currently, it is demonstrated that the mechanism of development of neurogenic dysfunction of the bladder of hypertonic, hyperreflective type is very complicated, but the most effective role is attributed to the sensitivity of the bladder destroyer to the parasympathetic mediator - acetylcholine. The use of acetylcholine is pathogenically reasoned [12, 13]. Currently, the anticholinergic preparation for the treatment of neurogenic hypertonic bladder dysfunction in children is Oxybutynin hydrochloride 5 mg / 5 ml, M-cholinoblock from the tertiary amines group. Along with the moderate M-cholinoblock action, it has the ability to directly influence the smooth muscles of the internal organs (myotropic spasmolytic action). It removes spasm and reduces the tone of the smooth muscles of the internal organs: gastrointestinal tract, bile ducts, urinary tract, including bladder. In the neurological bladder oxybutynin relaxes the bladder detrusor, reduces the spontaneous contractions of the detrusor, increases the volume of the bladder, reduces the frequency of urinary imperfections. The administration of physiotherapeutic treatment plays an important role.Laser treatment leads to analgesic, vasodilatory, anti-inflammatory effect, improves the rheological peculiarities of blood and microcirculation, has regenerative effects. Laser therapy penetrates deeply, up to 10-13 cm in the tissue and stimulates the immune system, the humoral system, activates neuromorphic factors [14]. It regulates the membranous and intracellular system, activates the lymphatic system, improves the urodynamics[15].

After finishing the laser therapy treatment in collaboration with M-cholinolytic preparations Sol. Atropine and Oxybutynin hydrochloride, it was found, that the volume of the bladder increased, according to the data of micturition cystoureterography.

Conclusions.

1. The signs and symptoms of malformative uropathies are not always strictures as a result of urinary tract disorders.
2. Every child who has a prolonged febrile syndrome should be urologically examined. Thus, we can discover a urological malformative disease and prevent the association of Chronic Kidney Disease.
3. The valve (posterior urethral stenosis) is a series of urinary tract complications in children. To exclude the complication, the child will be evaluated clinically, paraclinically to prevent the association of complications.
4. The results of the study performed and of the evaluation of the patient with malformative uropathy, that the inclusion of the laser therapy in the treatment program of hypertonic and hyper reflective neurogenic bladder allowed to activate the therapeutic action and the effect of pharmacotherapy with good early and distant results.

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