

## CLINICAL-LABORATORY FEATURES OF INTERSTITIAL NEPHRITIS IN CHILDREN WITH PURINE DYSMETABOLISM

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<https://doi.org/10.5281/zenodo.10324931>

**Abstract.** *Purpose of the study.* To study the clinical-laboratory features of the current interstitial nephritis in children developed against the background of hyperuricosuria and hyperuricosuria.

**Materials and methods.** *Examined 82 patients with a diagnosis interstitial nephritis of dysmetabolic genesis against uricosuria background of more than 1mg of uric acids per 1ml of urine. The metabolic status of patients was evaluated according to a special program, including genealogical analysis, screening tests and quantitative biochemical Studies. Urichemy was defined as the main biochemical marker (>320mcmol/l) and uricosuria.*

**Results.** The comparative analysis showed that the existing diagnostic difficulties can be overcome by careful comparison of anamnetic, clinical and laboratory data and timely diagnosis of uricosuric genesis of nephropathy. It has been found that in dysmetabolic interstitial nephritis as opposed to glomerulonephritis in the debut of the disease no extrarenal signs, does not suffer Glomerular filtration, nitrogenous function of the kidneys. Diagnosis confirmed by the presence of the characteristic spectrum of extrarenal pathology in the genealogy, the presence of hyperuricemia (>0.310mmol/l) and uricosuria (>1.0mg of uric acid in 1ml of urine). The most informative for this disease is debut at an early age, no extrarenal signs in the presence of isolated urinary syndrome.

**Keywords:** *children, hyperuricemia, hyperuricosuria, interstitial nephritis.*

Relevance. Scientific progress and technological improvements have led to the emergence of new fields of paediatric science and practice such as metabolic paediatrics and environmental paediatrics. Frequency of kidney pathology in children has increased in recent years [4]. A peculiarity of the nosological structure of kidney diseases over the last decades is a significant increase in the frequency of dysmetabolic nephropathy [4], the proportion of which among diseases of the urinary system (AMD) is between 29 and 40% [1], according to various authors. Peculiarities of current and corrective therapy of pyelonephritis developed against the background of metabolic disturbances [5] are studied. The most studied among dysmetabolic nephropathy is the so-called dysmetabolic nephropathy with oxalathic-calcium crystallium, which turned out to be polygonally inherited polyorgan membranopathy with familial cytomembrane instability [1]. Ecologically conditioned lesions of tubulointestinal kidney tissue are also manifested in the form of dysmetabolic nephropathies [6], due to detection of mutant effect by a number of enzymes, in particular those responsible for purine exchange [8].

In recent years, dismetabolic chronic interstitial nephrites have attracted the attention of researchers, among which the peritoneal nephropathy has a special place [5]. The incidence of ural nephropathies in the total child population is 4.2%, and among the recorded kidney pathology is 9.9% [10]. Age peculiarities of manifestation and current of urate nephropathy are under study [9].

Due to the intensity of purine metabolism in the growing body, pathological syndromes caused by uric acid hyperproduction (MK) in children are more frequent than diagnosed. The purpose of this work is to study the clinical and laboratory features of the flow of interstitial nephritis developed in children against the background of hyperuricemia with hyperuricosure.

**Research materials and methods.** Under supervision were 82 patients with interstitial jade against the background of uraturia in the age of 2 to 14 years. The metabolic status of patients was assessed on the basis of repeated studies carried out under a multi-stage special program that included genealogical analysis, screening tests and quantitative biochemical studies. As the main biochemical marker of disturbed exchange of purins the level of uricosuria and uricosuria by Mueller-Seifert, daily excretion with urine of urates by method Hopkins [12], oxalates by N.V. Dmitrova [2]. Due to the lack of work covering the functional condition of kidneys in children with nephropathy of the exchange genesis in climatic conditions in Uzbekistan, we used a set of indicators quantifying partial kidney functions: glomerular function was estimated by Van Slayke, Zimnitsky tubular function, Osmolarity of urine by cryoscopic method on OMK-I C-0I apparatus, ammonia and titanium acids as described by I.Todorov [12]. In addition to special studies, the data of general clinical studies and X-rays of excretory urograms were taken into account. Hyperuricemia was considered to be the level of uric acid in the blood serum more than 320mkmol/l, hyperuricosuria-if excreting with urine more than 1mg per 1ml of urine [11].

**Research results.**

Comparative retrospective analysis of the conditions of manifestation of interstitial nephritis (IN) against the background of the uratury shows that the complexity of clinical diagnosis of the disease is due to insufficient study at the early stages of development of the disease. Of the 82 children, 37 were diagnosed with acute and chronic glomerulonephritis (45.1%), 24 acute pyelonephritis (29.3%) and 21 recurrent urinary tract infections (25.6%)80% of patients from 1 month to 2 years of age received conventional treatment according to established diagnoses without lasting effect. Long-term treatment in these cases involves an unjustified risk of various side effects in the absence of positive results. Meanwhile, the comparative analysis shows that with the correct interpretation of clinical and generally accepted laboratory data, it is possible to timely diagnose kidney lesions of the metabolic genesis. Interstitial nephritis on the background of the uraturia is characterized by early manifestation in the form of isolated urinary syndrome (table.1), absence of extrarenal signs (edema, hypertension) at early stages.

*Table №1*

*Clinical-laboratory comparison data*

Groups Indicators	healthy (n=47)	sick glomerulonephritis (32)	sick interstitial nephritis (n=82)
Urinary syndrome detected against the background of infectious diseases	-	5 (4,2%)	62 (75,6%)
Occurrence of at least one week after the disease	-	112 (93,9%)	12 (14,6%)
Accidental detection			

	-	-	20 (24,4 %)
Swelling	-	120 (100%)	7 (8,5%)
Hypertension	-	57 (69,5%)	17(20,7%)
Hypotension	-		
Pallor	-	120 (100%)	17 (20,7%)
Abdominal syndrome	-	7 (8,5%)	21 (25,6%)
ESR	7,1±2,3	26,4±3,7 P<0,005	14,2±1,1 P<0,05
Antistreptolysin-O	0,2±0,02	0,62±0,05 P<0,001	0,209±0,03 P>0,05
residual nitrogen (mmol/ L)	15,7±1,4	30,6±2,1 P<0,005	19,4±1,4 P>0,05
cholesterin (mmol/ L)	4,84±0,4	8,44±0,91 P<0,005	6,43±0,85 P<0,005
total protein (g/l)	72,0±2,5	61,0±1,5 P<0,05	67,7±3,0 P>0,05
creatinine clearance (ml/min 1,73 m <sup>2</sup> )	98,6±4,8	64,2±7,4 P<0,05	71,0±5,7 P<0,05

Urinary syndrome was detected for the first time in 42 children under 3 years of age (51.2%), 27 (32.9%) 4-7 years of age and 13 children after 8 years of age (15.8%) against the background of acute respiratory virus infections, pneumonia and gastrointestinal diseases in 62 cases (75.6%) And the rest were discovered by accident during an examination for another reason. Eight children had enuresis (9.8 per cent) and abdominal syndrome in 21 (25.6 per cent). Children in physical development did not lag behind their peers, the health of sick children remained satisfactory, children are active. In all children, hematuria predominated over leukocytaria, and 12 children had transient macrochemistry. A moderate herding of the face, mainly in the morning, occurred in 18 children (20.5 per cent).

The interval after the transmitted infectious pathology is not characteristic here (14.6%), the values of DFA, ASLO, residual nitrogen, endogenous creatinine clearance (P>0.05) have not been changed. There is a «family portrait» of extrarenal pathology of children with uraturia: high frequency among adults (parents and other relatives) of such diseases as urea and bile disease, gout, hypertension, obesity, diabetes mellitus, and among siblings neuroArthritic diathesis, biliary pathology. Thus, in dysmetabolic interstitial nephritis unlike GN do not suffer in the disease debut globular filtration, nitrogen-dividing kidney function, non-specific inflammatory process performance, which has an undeniable diagnostic value. Interesting data on partial kidney function in patients with ID against the background of the uraturia (Table. 2).

**Table № 2**

***Partial kidney function in patients with horizontal nephropathy, depending on the activity of the renal process (M±m)\****

Groups Indicators	healthy kids (n=14)	Uraturia without nephropathy (n=19)	Interstitial nephritis against the
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			background of the uraturia (n=21)
Diurez (ml/day)	1080±17,0	676,0±14,0 P<0,005	907,0±20,0 P<0,005 P <sub>1</sub> <0,005
Creatinine clearance (ml/min 1,73 m <sup>2</sup> )	115,8 ±7,1	98,3±4,7 P<0,005	109,1±8,8 P<0,005 P <sub>1</sub> >0,05
Ammonia (mol/day)	53,3±1,18	33,6±1,76 P<0,001	24,7±1,76 P<0,001 P <sub>1</sub> <0,05
Titre. k-you (Mmol/day)	0,43±0,07	0,74±0,08 P<0,05	0,96±0,14 P<0,005 P <sub>1</sub> >0,05
Urats (mol/day)	2,94±0,27	5,17±0,56 P<0,05	6,34±0,49 P<0,005 P <sub>1</sub> <0,05
Urates/creatinine	0,85±0,08	1,6±0,14 P<0,05	1,92±0,38 P<0,001 P <sub>1</sub> >0,05
Oxalates (Mmol/day)	0,38±0,06	0,66±0,05 P<0,05	0,87±0,07 P<0,001 P <sub>1</sub> <0,05
Oxalates/creatinine	0,053±0,005	0,17±0,02 P<0,001	0,19±0,02 P<0,001 P <sub>1</sub> >0,05
Calcium (Mcmol/kg/day)	51,5±2,75	62,5±4,0 P<0,05	73,0±85 P<0,005 P <sub>1</sub> <0,05
Nephrotic Phosphorus Mmol/day	15,5±1,13	22,9±152 P<0,05	28,8±4,05 P<0,001 P <sub>1</sub> <0,05

\* - Note:P-reliability of difference compared to healthy.

P<sub>1</sub> is the validity of the difference between the basic groups.

As you can see from the scoreboard. 2 in patients with horizontal nephropathy without signs of activity of the nephritic process, the filtering and settling function of the kidneys is not changed ( $P > 0.5$ ). At the same time, there is a reliable decrease in excretion with urine ammonia (33.6 1.76 mmol/day.,  $P < 0.001$ ) and an increase in the level of titable acids (0.74 0.08 mmol/kg/day.,  $P < 0.05$ ). In patients with Ural nephropathy there is a simultaneous increase in the level of oxaluria (0.66 0.05 mmol/day, at the norm of 0.38 0.06 mmol/day.,  $P < 0.05$ ) ratio of oxalates to excreted creatinine ( $P < 0.001$ ), level of phosphaturia calciuria ( $< 0.05$ ). Aggravation of interstitial nephritis and layering of pyelonephritis leads to significant aggravation of partial kidney function disorders. For example, significant (92.0 10.4 and 60.4 5.6 ml/min 1.73m<sup>2</sup>) reductions were noted in the filtering function of the kidneys ( $P < 0.005$ ), the osmolarity of urine ( $P < 0.05$ ) and the ammoniogenetic function of the kidneys (respectively 33.6 1.76 and 24.7.76 mmol, 0.05/p). The level of titable acids increases slightly, reliably exceed the level of uricosuria, oxal-, calcium-, phosphaturia ( $P < 0.05$ ). The ratio of urates to creatinine is 1.92 0.38 at the norm of 0.85 0.08, ( $P < 0.05$ ). Therefore, in patients with ural nephropathy, unlike patients with glomerulonephritis at the early stages of development, there is a violation of homeostatic functions of kidney canals, regulatory and ammonioacidal gene function. Thus, despite the paucity of clinical manifestations of interstitial nephritis, careful assessment of family history, features of partial kidney function allows early diagnosis and differential therapy.

### **CONCLUSIONS.**

Interstitial dysmetabolic nephritis is characterized by manifestation at an early age, the absence of extrarenal symptoms in the debut with isolated urinary syndrome. Interstitial nephritis is characterized by an early disruption of homeostatic functions of the tubular kidney system.

The most informative condition for diagnosing dysmetabolic interstitial nephritis is the state of osorvating and ammonio-acidogenic kidney function.

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