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CLINICAL AND LABORATORY INDICATORS FOR VARIOUS FORMS OF PYELONEPHRITIS IN CHILDREN

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Key words: acute pyelonephritis, recurrent pyelonephritis, latent course.
Tayanch so'zlar: o'tkir pielonefrit, qaytalanuvchi pielonefrit, yashirin kechishi.
Ключевые слова: острый пиелонефрит, рецидивирующий пиелонефрит (рПН), латентное течение.

In almost 25% of patients, their progression continues, which leads to a change in the quality of life. Purpose of the research. To evaluate the features of clinical and laboratory parameters in various forms of pyelonephritis in children. Material and research methods. During the study, 70 children with pyelonephritis were examined. All children were divided into two groups: group 1 consisted of 25 (35.7%) children with acute pyelonephritis, and the second group - 45 (64.3%) children with chronic pyelonephritis. Research results. The clinic of rPN in 100% of cases (19) manifested itself on the 3rd - 4th day of exposure to the etiological factor. Signs of intoxication prevailed (headache, lethargy, drowsiness, loss of appetite) - 78.9% (15/19), short-term subfebrile fever - 63.1% (12/19), recurrent abdominal pain - 47.3%) (9/19).Conclusions. The predominance of the secondary form of pyelonephritis was stated.

BOLALARDA PIELONEFRITNI TURLI XIL SHAKLLARIDA KLINIK-LABORATOR KO'RSATKICHLAR
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Bemorlarning deyarli 25 foizida pielonefrit rivojlanishda davom etmoqda, bu esa hayot sifatining o'zgarishiga olib keladi. Tadqiqot maqsadi. Bolalarda pielonefritning turli shakllarida klinik va laboratoriya ko'rsatkichlarining xususiyatlarini baholash. Materiallar va tadqiqot usullari. Tadqiqot davomida pielonefrit bilan kasallangan 70 nafar bola tekshirildi. Barcha bolalar ikki guruhga bo'lingan: 1-guruhda o'tkir pielonefrit bilan og'rigan 25 (35,7%) bolalar, ikkinchi guruhda esa 45 (64,3%) surunkali pielonefrit bilan og'rigan bolalar bo'lib. Tadqiqot natijalari. QPN klinikasi 100% hollarda (19) etiologik omil ta'sirining 3-4-kunida o'zini namoyon qildi. Intoksikatsiya belgilari ustunlik qiladi (bosh og'rig'i, letargiya, uyquchanlik, ishtahaning pasayishi) - 78,9% (15/19), qisqa muddatli subfebril isitma - 63,1% (12/19), takroriy qorin og'rig'i - 47,3% (9/19). Xulosa: Pielonefritning ikkilamchi shaklining tarqalishi ko'rsatilgan.

КЛИНИКО- ЛАБОРАТОРНЫЕ ПОКАЗАТЕЛИ ПРИ РАЗЛИЧНЫХ ФОРМАХ ПИЕЛОНЕФРИТА У ДЕТЕЙ
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Почти у 25% пациентов продолжается их прогрессирование, что приводит к изменению качества жизни. Цель исследования. Оценить особенности клинико-лабораторных показателей при различных формах пиелонефрита у детей. Материал и методы исследования. В ходе исследования было обследовано 70 детей больных пиелонефритом. Все дети были разделены на две группы: 1 группу составили – 25 (35,7%) детей с острым пиелонефритом, а вторую группу – 45 (64,3%) детей с хроническим пиелонефритом. Результаты исследования. Клиника рПН в 100% случаев (19) проявлялась на 3 - 4 день воздействия этиологического фактора. Преобладали признаки интоксикации (головная боль, вялость, сонливость, снижение аппетита) - 78,9% (15/19), кратковременная лихорадка субфебрильного характера- 63,1%) (12/19), рецидивирующие абдоминальные боли - 47,3% (9/19). Выводы. Констатировано преобладание вторичной формы пиелонефрита.

Despite the progress made in the diagnosis and treatment of pyelonephritis, almost 25% of patients continue to progress, which leads to a change in the quality of life. The development of the pathological process in the renal tissue of the kidneys is caused by heterogeneous specific and nonspecific etiological factors [2, 3]

The authors distinguish AP and ChP into independent groups, indicating the diffuse and focal nature of the lesion of each group [7]. In their opinion, the main pathogenetic mechanisms of AP are immunological and a variant of direct toxic damage to the tubules, a variant of decreased renal perfusion, and ChP is a multifactorial disease of inflammatory and / or metabolic origin. Damage to nephrons by various etiological agents as a key event in the formation of inflammatory changes leads to a change in their phenotype (transdifferentiation) [5, 6].

Tubular cells acquire the ability to express the main pro-inflammatory cytokines, chemokines, and growth factors that act as local mediators formed directly in the renal tissue [1, 4].

Purpose of the study. To evaluate the features of clinical and laboratory parameters in various forms of pyelonephritis in children.

Material and research methods. During the study, 70 children with pyelonephritis were examined. All children were divided into two groups: group 1 consisted of 25 (35.7%) children with acute pyelonephritis, and the second group - 45 (64.3%) children with chronic pyelonephritis,

which we additionally divided into two subgroups depending on clinical form of the disease, where subgroup 1 consisted of 19 (42.2%) children with rPN, and subgroup 2 - 26 (57.7%) patients with latent ChP. The diagnosis was established according to the classification of PN in children (Korovina N.A., Zakharova I.N., 2004).

To identify the activity of the process, mandatory laboratory indicators were used: a clinical blood test; biochemical analysis of blood (total protein, proteinogram, SRP); general urine analysis; cumulative samples (according to Nechiporenko, Addis-Kakovsky); urine culture for flora with a quantitative assessment of the degree of bacteriuria, nitrite test; urine sediment morphology; uroleukogram.

Additional laboratory tests: coagulogram, determination of the concentration of amino nitrogen in the blood, examination of the level of uric acid, glucose; titer ASL-O; study of the immunological status (immunogram); biochemical genetic screening of urine; urine culture for Koch bacteria and express diagnostics; urine antibiogram; urine test for chlamydia, mycoplasma, ureaplasma (PCR, culture method); daily saluresis, anti-crystal-forming ability of urine, rhythm and volume of spontaneous urination.

To assess the nature of violations of renal functions, the following were used: 1 - methods to identify the state of different parts of the nephron: the glomerular apparatus (Rehberg's test); proximal tubules (urinary excretion (glucose, daily proteinuria); distal tubules (osmotic concentration ability (Zimnitsky test), determination of daily excretion of titratable acids and ammonia excretion, urine pH));

2 - methods that reveal violations of the total work of the nephron (determination of serum levels of creatinine, urea, electrolytes, acid-base state of the blood).

Research results. The acute course of the microbial-inflammatory process was diagnosed in 25 (35.7%) patients, chronic - in 45 (64.3%) patients (table 1). Before the age of 3, 31 (44.2%) out of 70 children fell ill with PN: 7 (22.5%) boys and 24 (77.5%) girls. At the same time, 10 children (40%) fell ill with AP up to 3 years old, 21 (46.6%o) were chronically ill. In the group under consideration, girls dominated among patients with AP (18 out of 25), chronic - 34 out of 45 (72% and 75.5%, respectively). The duration of the chronic form of the disease ranges from 1 to 13 years. The average duration of ChP was 3.8±0.5 years (in boys 5.3±1.2 years; in girls 3.2±0.4 years).

The most common factors preceding the onset of AP in children were intestinal disorders (constipation or diarrhea) - 9 observations (36%). Various infections (in 6 (24%) patients) and hypothermia (in 5 (20%) patients) were equally provoking factors. The reason for the manifestation of PN in 4 children (16%) was not established.

ChP debuted with an acute process in 29 (64.4%). In 42% of cases (19/45), the diagnosis was made during a routine medical examination based on the results of a clinical and laboratory examination. Subsequently, the chronic form of pyelonephritis acquired a relapsing course in 35 (77.7%) children, latent in 10 (22.2%) patients.

When examining children in the active phase, the degree of activity was established in accordance with the criteria for determining the activity of PN. Clinical criteria were systemic signs (fever, symptoms of intoxication, dyspeptic phenomena), dysuric disorders, pain syndrome.

A feature of the objective status of patients was the frequent detection of undifferentiated connective tissue dysplasia syndrome - 34 children (48.5%; 14 children (56%) with AP and 20 (44.4%) with ChP)), dysembryogenesis stigmas were noted in 17 (24 .2%) patients (7 (28%) and 10 (22.2%), respectively).

Table 1.

Distribution of patients depending on the age of manifestation of the disease.

Age of patients, year	Numbers of patients				Boys				Girls			
	AP		Chp		AP		ChP		AP		ChP	
	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%
until 1 year	4	16,6	1	2,1	1	16,7			2	11,1	2	5,6
1-3	7	29,1	19	39,6			6	50	7	38,9	13	36,1
4-6	5	21,0	12	25,0					5	27,8	11	30,6
7-11	9	33,3	16	33,3	5	83,3	6	50	4	22,2	10	27,7
Total	25	100	48	100	6	100	12	100	18	100	36	100

Table 2.

Distribution of patients according to age at onset disease.

Age of patients, year	Numbers of patients				Boys				Girls			
	rPN		LPN		rPN		LPN		rPN		LPN	
	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%
7-11	5	45,5	5	19,2	2	66,7	1	9,1	3	37,5	4	26,7
12-15	2	18,1	7	27	1	33,3	3	27,3	1	12,5	4	26,7
Total	11	100	26	100	3	100	11	100	8	100	15	100

The clinical basis of PN in young children (up to three years old) in the study group was febrile fever (15 (90.3%) out of 17 children) in combination with symptoms of intoxication. These manifestations were combined with a violation of the rhythm of urination (urgent urge, pallakiuria, rare micturition) in 12 (70.6%) patients, the equivalent of painful urination in 29.4% (5) of cases.

Recurrent PN was diagnosed in 19 (42.3%), latent - in 26 (57.7%) patients (Table 2). The peak of the formation of PN falls mainly on the older (9 (20%)) school age. At the same time, in 13 (76.5%) children out of 17, PN had a latent course. As in the first group, girls dominated among patients with rPN (11 out of 19), LPN - 15 out of 26 (57.8% and 57.7%, respectively). The duration of the disease ranged from 1 to 10 years. The average duration of ChP was 4.1±0.6 years (in boys 5.25±1.9 years; in girls 3.3±0.7 years).

The manifest onset of the disease, established in 10 children (22.2%), subsequently took on a wave-like character. The latent variant of the chronic course occurred in 26 patients (57.7%). Randomization by age showed a predominance of children of primary school age (21 (46.6%)).

Noteworthy is the burden of family history in relation to kidney disease, metabolic disorders (urolithiasis, cholelithiasis), which amounted to 38.5% of cases (27 children: 8 (32%) with AP and 19 (42.2%>) with ChP). The parents of 4 patients (5.7%) had occupational hazards (chemical factors).

Of the other risk factors, an unfavorable antenatal history was noted in 27 cases (38.5%). The pathological course of pregnancy was characterized by the predominance of early gestosis in mothers of observed children (19) over UP in the first trimester (4), APG-gestosis (3) and intrauterine infection (1). Perinatal encephalopathy occurred only in 7.1% of cases (5 children). A short period of breastfeeding occurred in 20 (28.5%) patients (5 with rPN (26.3%) and 15 (57.6%) with LPN).

Among the background conditions, neuroarthritic diathesis was more common (p=0.02) than exudative catarrhal diathesis (16 (35.5%) and 7 (15.5%), respectively). In 28 children (62.2%), signs of undifferentiated connective tissue dysplasia syndrome (8 (42.1%)) with RPN and 20 with LPN (76.9%) were clinically detected, including valve prolapse and abnormally located chords hearts. In 20 patients (44.4%), the syndrome was confirmed by the results of increased daily excretion of connective tissue metabolites.

In the history of 21 (46.6%) children, frequent intercurrent diseases were recorded, for which 14 patients (31.1%) took various medicinal (antibacterial) drugs up to 5-6

courses per year (9 with rPN and 5 with LPN). Chronic foci of infection (tonsillitis, adenoiditis, carious teeth) occurred with equal frequency in patients with rPN and LPN (8 (42.1%) and 21 (80.7%), respectively).

Tuberculosis was recorded in 17 (37.7%) patients (3 (15.7%) with rPN and 14 (53.8%) with LPN), the maximum duration of which was 6 years. It should be noted that 20 children (44.4%) had a aggravated allergic anamnesis (allergic diseases in the form of atopic dermatitis, acute urticaria, allergies to drugs, less often to food allergens) (3 with rPN(15.7%) and 17 (65, 3%) with LPN).

Criteria for inclusion of patients in a clinical trial:

• informed consent of the parents of the sick child to participate in the study and follow the doctor's instructions regarding the prescribed therapy;

• age of sick children from 7 to 15 years;

• the presence of clinically and laboratory confirmed PN;

Criteria for exclusion of patients from the study:

• parental refusal to participate in the study;

• the presence of severe concomitant somatic diseases in the stage of decompensation of the

pathological process that can affect the immunological status of the body;

• the use of immunoactive drugs in the last 30 days before the start of the study;

• change in the main diagnosis (PN) during the differential diagnosis.

Discussion of the research results. Given the problem of early diagnosis of PN, it is necessary to highlight the features of the clinical picture in this group. The RPN clinic in 100% of cases (19) manifested itself on the 3rd - 4th day of exposure to the etiological factor. Signs of intoxication prevailed (headache, lethargy, drowsiness, decreased appetite) - 78.9% (15/19), short-term subfebrile fever - 63.1% (12/19), recurrent abdominal pain - 47.3%) (9/19). Extrarenal manifestations (edematous syndrome) occurred in 42% (8/19), isolated urinary syndrome - 26.3% (5/19), tendency to hypotension - 31.5% (6/19) of cases.

The latent variant of PN (61.5% (16/26)) was characterized by accidental detection of an isolated urinary syndrome, which was combined in 87.5% (14/16) of cases with signs of endogenous intoxication.

Findings. Based on the results of clinical, laboratory and instrumental methods of examination, the prevalence of the secondary form of pyelonephritis was stated (n=65 (92.8%)). We attribute this to the presence of a secondary immunodeficiency state, indirect signs of which are: frequent recurrence and protracted course of the disease, short-term effect of ongoing antibiotic therapy, multiple foci of chronic infectious pathology, susceptibility to SARS. The most common factors preceding the onset of AP in children were intestinal disorders (constipation or diarrhea).

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