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Study of portional kidney function in yound children with nephropathy exchange genesos

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Abstract: 121 children with pneumonia on dismetabolic nephroparthy background were investigated, and 20 children with pneumonia without urinary syndrome. It were performed following methods of kidney partial functions investigation of: glomerulus filtration, ammonia, acidity, osmotic quality of urine, daily metabolites screening (oxalates, urates, urine acid). In patients with pneumonia on dismetabolic nephroparthy background were revealed significant alterations of kidney partial functions, structural and functional condition of erythrocytes membrane, increasing of peroxides lipid oxidation processes. For the purpose of correction children with pneumonia and renal pathology it was prescribed following treatment.
Key words: early age, urinary syndrome, dysmetabolic nephropathy.

Introduction: Kidney diseases in children are a common pathology from 16.6 to 54:1000 children's population and due to the frequency of the latent current, the tendency to chronize, is an actual problem of modern pediatrics. Wide introduction in clinical nephrology of clinical-genetic and biochemical methods of research allowed to establish changes in their nosological structure, the frequency of multifactorial conditioned clinical forms [4]. Thus, according to epidemiological studies, the predominant in the structure of nephropathy (34-40%) [2] are nephropathy of metabolic genesis, including 10-19% oxalate, 14-29% uranium nephropathy. At the same time renal pathology is manifested and established in connection with respiratory pathologies - among newborns in the department of neonatal pathology 34.2% [1], among young children treated for various bronchopulmonary diseases 17-35%, and with staphylococcal infections 78.6%. Moreover, 24.2% to 31.5% of children with residual urinary syndrome are discharged after the main disease is eliminated [3]. In light of the above, it is clear that the existing perception of urinary syndrome in young children, with the most common bronchopulmonary pathology at this age as a transient condition ("infectious kidney", "toxic kidney", "toxic-infectious kidney"), poses a significant threat to the health of the growing body. There are several reasons for this: first, it is known that the development of toxic conditions in children of early age (including those causing kidney damage) is not accidental and in their development toxicosis of pregnant women, the presence of hereditary metabolic disorders, heredity burdened with nephropathy, and secondly, this initial manifestation is typical for most hereditary, dysmetabolic and congenital kidney diseases with the most serious prognosis [2,6]. In practice, even repeated episodes of urinary syndrome against the background of various intercourse diseases continue to be assessed as an infectious or toxic kidney. Meanwhile, modern methods of examination of children and relatives and wide introduction of genetic and biochemical methods of investigation into nephrological practice allow to specify metabolic disorders that cause damage to kidneys with difficult to differentiate urinary syndrome [5].

Purpose of work: In connection with the aforesaid purpose of the present work is to develop principles of early differential diagnostics of kidney lesions of metabolic genesis on the basis of complex study of the state of partial kidney functions in children of early age who have pneumonia with kidney affection.

Materials and methods: The functions of the lump apparatus were evaluated by endogenous clearance on Van Slayke.

The state of renal tubular functions was judged by the cryoscopic method of urine osmolarity on the apparatus OMK Shch-01, titratable acids by I. Todorov (1963).

The content of uric acid in daily urine was determined by the Muller-Seifert method based on colorimetric determination of uric acid with phosphorus tungsten reagent Folin.

The quantitative determination of oxalates in urine was carried out according to N.V. Dmitrieva (1966), and the Hopkins method in the description by O.V. Travina (1955) was used for the daily excretion of urates with urine.

Results and discussions: We studied partial kidney function in 121 patients with pneumonia with dysmetabolic nephropathies (DSMN) and 20 patients with pneumonia without dysmetabolic nephropathies (DSMN). All patients with pneumonia had a tendency to decrease the daily diuresis, and those with pneumonia without DPMN had reliably decreased to 0.37±0.013 compared to healthy children 0.450+0.038 ($p<0.001$) and those without DPMN 0.430+0.021 ($p<0.05$). Decrease in ball filtration was found in pneumonia patients with SRMS up to 0.97+0.17 ml/sec ($p<0.05$), which, apparently, is associated with hemodynamic disorders on the background of infectious toxic lung injury, hyperthermia, microcirculatory disorders.

A significant decrease in ammonia excretion in patients was found. pneumonia with ERS up to 9.0+1.18 mmol/s compared to healthy ones children ($p<0.001$) and children with pneumonia without ESMN 42.0+1.2 ($p<0.05$).

Titrate acid excretion was reduced to 23.37±4.25 mmol/s compared to 51.0+2.8 mmol/s ($p<0.001$) in healthy children and 48.8+2.2 ($p<0.001$) in children with pneumonia without DPHS. ($p<0,05$).

A decrease in the indicators of acidoammoniogenesis in patients with pneumonia with DZMN indicates tubular renal dysfunctions that cause a violation of the adaptive and compensatory functions of the body in conditions of hypoxia, which enhances metabolic acidosis in pneumonia.

A significant increase in urinary oxalate excretion was found in children with pneumonia with DZMN up to 244.0 + 1.8 μmol / s compared with healthy children 110.0 + 10.5 ($p <0.001$), and with a group of children with pneumonia without DZMN 130.0 + 11.5 ($p <0.05$), which may be in the nature of secondary oxaluria, which is the result of instability of the cytomembranes of the renal epithelium against the background of intoxication of the body, hypoxia, electrolyte disturbances accompanying the development of the inflammatory process in the lungs ...

Considering that 2/3 of patients with pneumonia with urinary syndrome had a hereditary burden of impaired metabolism of oxalic acid and uric acid, which was revealed by studying pedigrees and cross-examination of relatives, increased excretion of oxalates and urates along with urate and oxalate -calcium crystalluria we regarded as a secondary oxaluria - uraturia, which is the result of hereditary instability of cytomembranes.

In patients with pneumonia with DMD, there was an almost twofold increase in the excretion of urate and uric acid, 6.9 + 0.22 mmol / s and 6.64 + 0.36 mmol / s, respectively, compared with the indicators in healthy children ($p <0.001$) and children with pneumonia without DZMN 3.18 + 0.20 ($p <0.05$) and 5.2 ± 0.3 ($p <0.05$). An increase in the excretion of urates and uric acid can be associated with an increase in catabolic processes against the background of hyperthermia, hypoxia and the breakdown of purine bases, which causes an increase in the level of uric acid in the blood. Thus, functional disorders of the kidneys are characteristic of pneumonia in patients with pneumonia without DZMN, the concentration of nephrotoxic metabolites (urates, oxalates, MK) does not reach the values that have a

nephrotoxic effect, and as the targeted therapy of pneumonia, diet and water regime decreases, the concentration of urates, oxalates decreases, uric acid, which corresponded to the disappearance of such clinical manifestations as pasty eyelids, faces, normalization of diuresis. A number of studies have shown the high efficiency of the complex phytoneering drug kanephron in the treatment and prevention of microbial-inflammatory and dysmetabolic processes of the urinary system (3).

It should be noted that in patients with nephropathy of metabolic genesis with hereditary complications with layering of pneumonia, violations of partial renal functions are revealed - oliguria, a decrease in indicators of acid ammonium genesis and an increase in nephrotoxic metabolites, oxalates, urates, uric acid, thereby having a nephrotoxic effect ... This is possibly due to a violation of the adaptation process at the cellular level as a result of an individual inadequate response to the effects of a stress factor in this case of infection. Damage to the membrane structures of the renal tubules can lead to secondary changes in the processes of secretion and reabsorption in the tubules, causing the development of secondary tubulopathies.

Study of partial renal functions depending on nosologeological forms of dysmetabolic nephropathies were performed in children patients with pneumonia with metabolic disorders.

The daily excretion of ammonia significantly decreased with dysmetabolic IN 23.6 ± 3.9 mmol / s (Cp <0−05) and ICD 29.6 + 3.2 mmol / s (p <0.05) and with PN 33, 8 + 2.6 (p <0.05), compared with healthy children. The most pronounced decrease in the excretion of treatable acids was observed with IN 19.2 + 7.9 mmol / s 1.73 m, (p <0.05) and with PN and ICD was 24.7 + 3.85 mmol / s, respectively and 26.2 + 4.7 mmol / s (p <0.01).

The highest urine osmolarity was observed in patients with ICD 976 + 62.6 mmol / s (p <P} P5), IN 898 + 62.5 mmol / s (p <0.05) and PN 886 + 58.74 mmol / s (p <0.05) compared with healthy children 627 ± 61.7 mmol / s.

Thus, a decrease in the function of acidoammoniogenesis was revealed in the group of patients with IN, compared with patients with PN and ICD, which characterizes the intensity of the compensatory-adaptive capabilities of the kidneys to maintain the acid-base state (CBS) of the body under conditions of tissue hypoxia, respiratory and metabolic ¬chesky acidosis in pneumonia.

Increased excretion of nephrotoxic metabolites (oxalates was noted at PN 226.0 ± 23.0 mmol / s (p <0.05), ICD 262.7 ± 49.8 mmol / s (p <0.01), and IN 243, 2 ± 28.4 mmol / s (p <0.05), compared with healthy children.Urate excretion in PN was 6.22 ± 0.52 mmol / s, ICD 8.3 ± 1.32 mmol / s (p <0.001), IN 6.36 ± 0.26 mmol / s (p <0.001), compared with healthy children.Excretion of uric acid is highest in patients with pyelonephritis 7.1 ± 0.3 mmol / s (p < 0.01), with ICD 6.26 ± 0.53 mmol / s (p <0.05) and ID 6.55 ± 0.37 mmol / s (p <0.05), compared with healthy children 4 , 13 ± 0.21 mmol / s.

The existing changes in the function of acidoammoniogenesis are associated with an increase in the excretion of nephrotoxic metabolites, on the background of a hereditary burden of a family history of the exchange of MK, oxalates. Intoxication, dehydration, respiratory failure and hypoxia against the background of pneumonia, aggravating metabolic disorders, lead to a disorder of the homeostatic function of the kidneys.

Accordingly, the danger of the nephrotoxic effect of urates and oxalates on the kidneys increases. A sharp increase in the concentration of urates and oxalates against the background of pneumonia in children with metabolic disorders creates a threat of tubular obstruction with subsequent deterioration of urine outflow, up to the development of renal failure. Clinically, such children showed pasty eyelids, face, decreased urine output - to oliguria.

Conclusions: Thus, pronounced changes in the tubular functions of the kidneys in young children with dysmetabolic nephropathies, inadequacy of their adaptive responses

under conditions of hypoxia and especially when exposed to infection, being a factor affecting the course of pneumonia, contribute to the chronicity of the pathological process in the kidneys and increase the risk of developing interstitial nephritis, microcrystallization, stone formation in them. Treatment in these cases without a differentiated correction of dysmetabolism, with a focus mainly on urinary syndrome, can lead to stabilization and chronicity of the renal process, which acquire an independent important medical and social significance.

One of the phytopreparations registered in the Republic of Uzbekistan, allowing to establish the normal passage of urine, the rhythm of urination, to avoid high concentration of salts in urine, the formation of large crystals, is the drug Kanefron N of the German company "Bionorica". The drug improves blood flow to the kidneys, helps to reduce proteinuria and abnormal crystallization of urine. The flavonoid components included in the preparation Kanefron N have an angioprotective, anti-inflammatory and antispasmodic effect. Due to its antioxidant properties, Canephron N has a pronounced protective effect against damage by free radicals. Kanephron N is indicated for all types of metabolic nephropathies.

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