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CLINICAL AND LABORATORY FEATURES OF THE COURSE OF DYSMETABOLIC NEPHROPATHY IN CHILDREN WITH IMPAIRED PURINE METABOLISM

Turaeva Nazira Yuldashevna

Assistant of the Department of Pediatrics №2, Samarkand State Medical University, Samarkand, Republic of Uzbekistan

Abstract. In recent years, dysmetabolic chronic interstitial nephritis has attracted the attention of researchers, among which urate nephropathies occupy a special place. The frequency of urate nephropathies in the general pediatric population is 4.2%, and among the registered renal pathology-9.9%. The age-related features of the manifestation and course of urate nephropathies are under study.

Due to the intensity of purine metabolism in a growing body, pathological syndromes caused by hyperproduction of uric acid (MC) in children are more common than diagnosed.

Key words: dysmetabolic nephropathies, children, violation of purine metabolism, interstitial nephritis.

КЛИНИКО-ЛАБОРАТОРНЫЕ ОСОБЕННОСТИ ТЕЧЕНИЯ ДИСМЕТАБОЛИЧЕСКОЙ НЕФРОПАТИИ У ДЕТЕЙ С НАРУШЕНИЕМ ПУРИНОВОГО ОБМЕНА

Тураева Назира Юлдашевна

Ассистент кафедры Педиатрии №2, Самаркандский государственный медицинский университет, Самарканд, Республика Узбекистан

Аннотация. В последние годы привлекает внимание исследователей дисметаболические хронические интерстициальные нефриты, среди которых особое место занимают уратные нефропатии. Частота уратных нефропатий в общей детской популяции составляет- 4,2%, а среди учтенной почечной патологии-9,9%. Возрастные особенности манифестации и течения уратных нефропатий находится в стадии изучения.

В силу интенсивности метаболизма пуринов в растущем организме, патологические синдромы, обусловленные гиперпродукцией мочевой кислоты (МК) у детей встречаются чаще, чем диагностируются.

Ключевые слова: дисметаболические нефропатии, дети, нарушение пуринового обмена,интерстициальный нефрит.

Introduction. Scientific progress and technological improvements have led to the emergence of such new areas of pediatric science and practice as metabolic pediatrics, environmental pediatrics. In recent years, there has been an increase in the frequency of renal pathology in childhood [4.10]. A feature of the nosological structure of kidney diseases in recent decades is a significant increase in the frequency of dysmetabolic nephropathies [4], the proportion of which among diseases of the urinary system (CHI) is, according to various authors, from 29 to 40% [9].

The features of the course and corrective therapy of pyelonephritis, which developed against the background of metabolic disorders, are being studied [5, 10]. The most studied of the dysmetabolic nephropathies is the so-called dysmetabolic nephropathy with calcium oxalate crystalluria, which turned out to be a polygenically inherited multiple organ membranopathy with familial cytomembrane

instability [1].

Ecologically caused lesions of the tubulointerstitial kidney tissue also manifest themselves in the form of dysmetabolic nephropathies [6], which is associated with the identification of a mutant effect on the part of a number of enzymes, in particular those responsible for purine metabolism [8].

The purpose of this study was to study the clinical and laboratory features of the course of interstitial nephritis developed in children against the background of hyperuricemia with hyperuricosuria.

Materials and methods. 82 patients with interstitial nephritis on the background of uraturia aged from 2 to 14 years were under observation. The metabolic status of patients was assessed based on the results of multiple studies conducted according to a multi-stage special program that included genealogical analysis, screening tests and quantitative biochemical studies.

The level of uricemia and uricosuria according to Muller-Seifert and daily urinary excretion were determined as the main biochemical marker of impaired purine metabolism urates by Hopkins method [10], oxalates by N.V. Dmitreva [2]. Due to the lack of studies highlighting the functional state of the kidneys in children with nephropathies of metabolic origin in the climatic conditions of Uzbekistan, we used a set of indicators that quantitatively characterize partial kidney functions: glomerular function was assessed by Van Slayke endogenous creatinine clearance, tubular functions by Zimnitsky's test, urine osmolarity by cryoscopic method on the OMK-I C-0I apparatus, ammonia and titrated acids in the description of I. Todorov [10].

In addition to special studies, data from clinical studies and X-ray planimetry of excretory urograms were taken into account. Hyperuricemia was considered to have a serum uric acid level of more than 320mc mol/l, hyperuricosuria -with urinary excretion of more than 1 mg per 1 ml of urine [10].

Research results and discussion. A comparative retrospective analysis of the conditions of manifestation of interstitial nephritis (IN) against the background of uraturia shows that the complexity of the clinical diagnosis of the disease is explained by their insufficient study at the early stages of the disease development. Of the 82 children, 37 were referred with a diagnosis of acute and chronic glomerulonephritis (45.1%), 24 acute pyelonephritis (29.3%) and 21 recurrent urinary tract infection (25.6%), 80% of patients from 1 month to 2 years received conventional treatment according to established diagnoses without sustained effect. Long-term, sometimes persistent treatment in these cases is associated with an unjustified risk of various side effects, in the absence of positive results. Meanwhile, comparative analysis shows that with the correct interpretation of clinical and generally accepted laboratory data, timely diagnosis of kidney lesions of metabolic origin is possible.

Thus, interstitial nephritis on the background of uraturia is characterized by early manifestation in the form of an isolated urinary syndrome, the absence of extrarenal signs (edema, hypertension) in the early stages. Urinary syndrome was detected for the first time in 42 children under the age of 3 years (51.2%), in 27 (32.9%) 4-7 years and in 13 children after 8 years (15.8%) against the background of acute respiratory viral infections, pneumonia and gastrointestinal diseases in 62 cases (75.6%), and the rest they were revealed accidentally during an examination for another reason. Enuresis was observed in 8 children (9.8%), abdominal syndrome in 21 (25.6%). Children did not lag behind their peers in physical development, the well-being of sick children remained satisfactory, and the children were active.

Hematuria prevailed over leukocyturia in all children, and transient macrohematuria was noted in 12 children. Moderate pasty complexion, mainly in the morning, occurred in 18 children (20.5%).

The interval after an infectious pathology is not typical here (14.6%), the indicators of DFA, ASLO, residual nitrogen, and endogenous creatinine clearance (P>0.05) have not changed.

A "family portrait" of the extrarenal pathology of children with uraturia is characteristic: There is a high incidence among adults (parents and other relatives) of diseases such as urolithiasis and cholelithiasis, gout, hypertension, obesity, diabetes mellitus, and among siblings neuroarthritic diathesis, biliary pathology. Thus, in dysmetabolic interstitial nephritis, unlike GN, glomerular filtration, nitrogen excretion function of the kidneys, and nonspecific indicators of the inflammatory process do not suffer at the onset of the disease, which is of undoubted diagnostic importance. Data on partial renal functions in patients with IN on the background of uraturia are of interest.

In patients with urate nephropathy without signs of activity of the nephritic process, the filtration and osmoregulatory function of the kidneys were not changed (P>0.5).At the same time, there was a significant decrease in urinary excretion of ammonia (33.6±1.76 mmol/day, P<0.001) and an increase in the level of titrated acids (0.74±0.08 mmol/kg/day, P<0.05). In patients with urate nephropathy, there is a simultaneous increase in the level of oxaluria (0.66±0.05 mmol/day, at a rate of 0.38±0.06 mmol / day, P<0.05), the ratio of oxalates to excreted creatinine (P<0.001), the level of phosphaturia and calciuria (P<0.05). Exacerbation of interstitial nephritis and layering of pyelonephritis leads to a significant aggravation of disorders of partial renal functions.

Thus, in this group there was a significant (respectively 92.0±10.4 and 60.4±5.6 ml/min 1.73 m2) decrease in renal filtration function (P<0.005), urine osmolarity (P<0.05) and ammoniogenetic renal function (respectively 33.6±1.76 and 24.7±1.76 mmol/day, P<0.05). The level of titrated acids increases slightly, significantly exceeding the level of uricosuria, oxalate, calcium, phosphaturia (P<0.05). The ratio of urates to creatinine is 1.92±0.38 with a norm of 0.85±0.08 (P<0.05).

Consequently, in patients with urate nephropathy, unlike patients with glomerulonephritis, a violation of the homeostatic functions of the renal tubules, osmoregulatory and ammonioacidogenetic functions is observed already at the early stages of development. Thus, despite the paucity of clinical manifestations of interstitial nephritis, a thorough assessment of family history, features of partial renal function allows early diagnosis and differentiated therapy.

Conclusions. Dysmetabolic interstitial nephritis is characterized by manifestation at an early age, absence of extrarenal symptoms at the onset in the presence of isolated urinary syndrome. Interstitial nephritis against the background of uraturia is characterized by an early violation of the homeostatic functions of the tubular kidney system. The most informative for the diagnosis of dysmetabolic interstitial nephritis are the state of osmoregulatory and ammonio-acidogenetic kidney function.

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