American Journal of Interdisciplinary Research and Development
ISSN Online: 2771-8948
Website: www.ajird.journalspark.org
Volume 26, March - 2024

THE ROLE OF DYSMETABOLIC NEPHROPATHY IN THE DEVELOPMENT OF SECONDARY PYELONEPHRITIS IN CHILDREN

Utamurodova Nigora Abdiraxmanovna
Samarkand State Medical University, Republic of Uzbekistan, Samarkand.

Abstract

Resume Relevance

Dysmetabolic nephropathies (DN) contribute to the development of urolithiasis in children, the occurrence of urinary tract infection and the development of secondary pyelonephritis, tubulointerstitial changes in the kidneys.

Goal

Analysis of the frequency and structure of the bottom as a risk factor for the formation of pyelonephritis in children. Materials and methods. An analysis of 87 cases in children with DN was carried out. All children underwent general clinical examination, ultrasound diagnostics of the urinary system, and laboratory examination.

Results

There was a significant excess in the number of girls (72.6%) compared to boys (27.4%). The structure of nephropathies was dominated by oxalate nephropathies, which were recorded in isolation in 88.1% of all children. Phosphate and urate DN were much less common, both in isolation and in combination with oxalate nephropathies. Attention was drawn to the increase in the number of children with DN with age. The specific gravity of oxalate, phosphate and urate DN did not change significantly with age in children and was approximately the same in all age groups. In 73% of cases, DN was combined with infectious and inflammatory diseases of the urinary system. Thus, more than two thirds of children (68.9%) had pyelonephritis. Half of the young children had a combination of DN with acute pyelonephritis. Gradually, with age, the proportion of acute pyelonephritis decreased and the number of cases of chronic pyelonephritis increased (in the group of children aged 11-17 years, it was registered in 58.3%). The spread of DN among children of the Samarkand region in connection with their place of residence has been studied. Conclusions. In the pediatric population, there is a high incidence of DN with a predominance of isolated calcium oxalate nephropathies. The detection of DN in children of the first years of life, especially in girls, should be considered as a risk factor for infectious and inflammatory diseases of the urinary system. More often, DN are registered in large industrial ecologically polluted centers of the region.

Keywords: children; urinary system; dysmetabolic nephropathies; pyelonephritis.

Introduction

In recent decades, an increase in the frequency of catabolic nephropathies (CN) has been observed in the structure of childhood pathology, which is associated with an increase in the influence of adverse environmental factors on the population living in ecologically polluted regions [1-4]. CN is a group of nephropathies with different etiologies and pathogenesis, united by the fact that their development is associated with metabolic disorders that lead to the appearance of a crystalline precipitate in the urine and, as a result, damage to market structures from the urinary system [5]. Metabolic pathology leads to changes in the functional state of the kidneys or to their structures of shifts at the level of various elements of the nephron [3]. On the one hand, CN contributes to the development and spread of urolithiasis in children, the incidence of which has been increasing worldwide for several decades [2-9]. On the other hand, the presence of crys thaluria contributes to the occurrence of urinary tract infection and the development of secondary pyelonephritis, and tulointerstitial changes in the kidneys [7, 10, 13]. Urinary tract infections, among which pyelonephritis occupies the first place in severity, are one of the most common and serious bacterial infections encountered by pediatricians and primary care physicians [12-17]. Among the reasons for the occurrence of CN is the presence of instability of cellular structures, which can be either genetically determined by an anomaly of the Constitution (familial instability of cytomembranes), or acquired during the growth and development of a child [3-5]. Urinary tract infection is an important factor in crystal formation, especially for microorganisms that produce urine and are able to break down urea [16]. Among the exogenous factors in increasing the prevalence of CN, technogenic environmental pollution, increased mineralization of water, the intake of large amounts of xenobiotics into the human body, and vitamin deficiency are of decisive importance [10, 15]. Causally significant factors lead to destabilization of the lipid fraction of the cytoplasmic membranes of the kidneys, profound disorders of their structure and function, and contribute to increased formation of lipid peroxidation products. At the same time, morphologically, pronounced demotion of the brush edges of the proximal and disc tubules, filling of the tubule lumen with crystals, and pronounced lymphohistiocytic infiltration of the interstitium are revealed [4,5].

The formed CN contribute to the fixation of microorgasms in the tubulointerstitial tissue of the kidneys and can enhance the formation of crystals, causing the development of pyelonephritis [3, 8,12]. At the same time, the problem of early diagnosis of metabolic Shen pores and related nephropathies remains one of the most relevant in pediatrics and pediatric nephrology [4,8,18].

The purpose of our work was to analyze the frequency and structure of DN as a risk factor for the formulation of pyelonephritis in children.

Materials and methods

We analyzed 87 cases in children with CN who were undergoing inpatient examination and treatment in the Department of Nephrology of the clinical department of the Samarkand

City Children's Hospital in 2022-2023. All children underwent a general clinical examination, ultrasound diagnostics (ultrasound) of the urinary system, and laboratory examination. The criteria of D. D. Ivanov, A.M. were used to determine the presence of CN in a child. Korzha: documented metabolic disorder with excess salts in urine, detection of echopositive inclusions in kidney bowls according to ultrasound data and the presence of urinary syndrome. The laboratory examination included general clinical examinations, urine analysis according to Nechiporenko and Zimnitsky, urine culture, as well as examination of trench salts, which made it possible to establish the type of crystalluria. To determine the type of CN, laboratory diagnostic criteria were used by I. V. Bag Dasarova et al. Oxalate nephropathy was diagnosed in the case of neutral urine acidity or its shift to a slightly acidic side (pH 5.2-7.0), an increase in the level of oxalates in the daily urine analysis of more than 1.2 mg / kg, calcium-more than 4.1 mg / kg / day, potassium in the blood serum-more than 2.72 mmol / L. Nephropathy was diagnosed in the case of The pH is below 5.0 in the Oak urine test, an increase in the level of uric acid in the blood is over 0.3 mmol / l, in urine-over 4.0 mmol/l /day (or 35 mg/ kg / day). Phosphate nephropathy was diagnosed in the case of alkaline acidity (pH > 7.0) of urine in a daily analysis, with an increase in serum phosphorus levels above 1.78 mmol/ l, in urine-more than 34 mmol/l / day (or more than 4.0 mg / day).

Results and discussions for the analysis of the age and gender characteristics of the activity of DN children were divided into age groups: 0-3 years — 18 children (6 boys, 12 girls); 4-6 years — 21 children (3 boys, 18 girls); 7-10 years — 25 children (9 boys, 16 girls); 11-17 years — 23 children (4 boys, 19 girls). Among the total number of children with DN, there was a significant excess in the number of girls (74.7%) compared with boys (25.3%) ($p > 0.001$ This was due to the fact that in most cases children were admitted to the hospital at the stage of infection in the kidneys or urinary system with DN, when the latter manifested itself as a background pathology. At the same time, girls suffered from pyelonephritis 3-5 times more often than boys. Girls who had clinical and laboratory signs of vulvovaginitis or pyelonephritis were subject to more thorough examination and follow-up with repeated urine tests and ultrasound of the kidneys. Quite often, CN was detected in them before the hospital stage (Fig. 1).

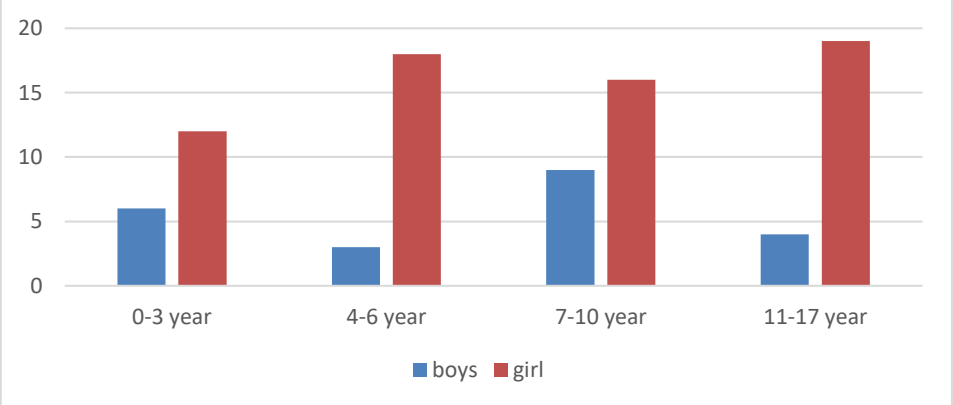

Figure 1. Distribution of children with CN by age and gender

According to the results of the analysis, oxalate nephropathies prevailed in the structure of nephropathies, which were recorded in isolation in 88.1% of all children, which coincides with the data of other researchers [16, 18]. Phosphate and urate CN were much less common, both in isolation and in combination with oxalate nephropathies, without a probable difference depending on age (Fig. 2).

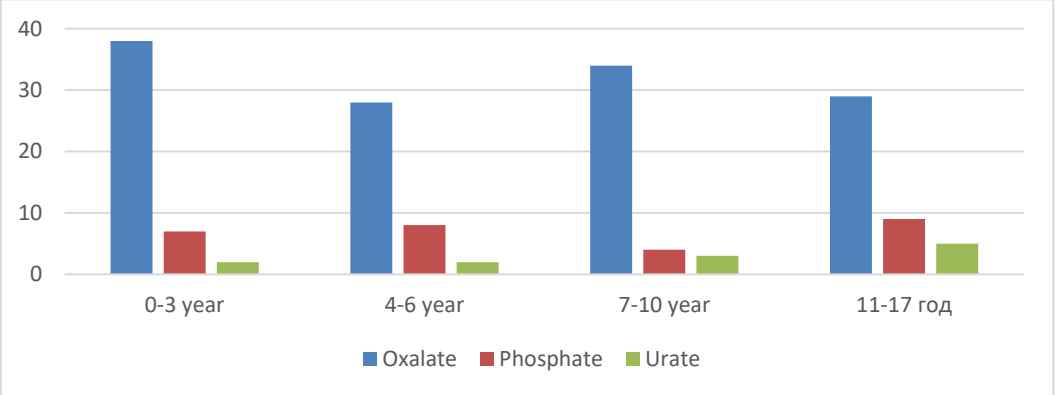

Figure 2. The structure of the DN depending on the age of the children.

Attention was drawn to the increase in the number of children with DN with age. So, in the group of children under the age of 3, there were 18 (20.7%), while in the group of patients aged 7-10 years -21 (24.3%) ($p < 0.05$). Children aged 11-17 had the most cases of DN-25 (28.7%) ($p < 0.001$). The specific gravity of oxalate, phosphate and urate DN did not change significantly with the age of children and was approximately the same in all age groups ($p > 0.1$). Isolated DN was found only in 27% of children, in other cases, a combination of DN with infectious and inflammatory diseases of the urinary system was recorded. Thus, more than two thirds of children (66.7%) already had pyelonephritis during the examination. It should be noted that in different age periods, the unity of DN with other kidney diseases differed. Thus, half of the young children had a combination of DN with acute pyelonephritis (OP), which was the most frequent in comparison with other age groups ($p < 0.01$). Gradually, with age, the proportion of OP against the background of DN decreased, amounting to a fourth part in the group of children aged 4-6 years-18.8%, and in the group of children aged 11-16 years only 14.5% of all cases. On the contrary, the number of cases of chronic pyelonephritis (CP) increased with age, which was natural. Thus, in children aged 0-3 years, CP was rarely registered and amounted to 10.2% of cases, in children aged 4-6 and 7-10 years, its frequency gradually increased.

In the older group of patients, CP was registered in more than half (57.23%) of children ($p < 0.001$) compared with the group of young children. The combination of DN with urinary tract infection was more often recorded in young children (12.3%) and rarely in other age groups ($p > 0.1$). Children with this combination, especially girls, due to the anatomical and physiological characteristics of the female body and the high frequency of ascending infection, were considered as a risk group for the development of pyelonephritis in the future [7, 13]. According to the analysis, one in five girls with DN had vulvovaginitis — slightly more

often in young children (26.7%), less often in the senior school group — 17% ($p > 0.05$). The presence and combination of whom was also unfavorable in relation to the development of further pathology on the part of the urinary tract systems, which required appropriate preventive measures. According to the literature, oxalate neuropathies are characterized by a combination with manifestations of connective tissue dysplasia of various organs and systems, with a cream with pathological renal mobility. According to the results of our analysis, nephroptosis as a manifestation of pathological renal mobility was recorded in 9.2% of children, kidney abnormalities were less common — 7.6% of cases. Doubling of the calyx-pelvic apparatus and ureters prevailed among the anomalies of the rosacea.

The results showed the need for therapeutic and preventive measures that would help reduce the effects of ecopathogens on the body of children living in an intensive work area.

Conclusions

1. Among the pediatric population, there is a high incidence of CN, among which isolated calcium oxalate nephropathies predominate. The risk of developing CN increases in proportion to the age of the child.
2. The detection of CN in children of the first years of life, especially in girls, should be considered as a risk factor for infectious and inflammatory diseases of the respiratory system.
3. Most often, DN are registered in large regional think tanks, which is environmentally polluted.

References

1. Гаппарова Г. Н., Ахмеджанова Н. И. COVID-19 PANDEMIYASI DAVRIDA BOLALARDA PIELONEFRITNING KLINIK-LABORATOR XUSUSIYATI, DIAGNOSTIKASI VA DAVOLASH //ЖУРНАЛ РЕПРОДУКТИВНОГО ЗДОРОВЬЯ И УРО-НЕФРОЛОГИЧЕСКИХ ИССЛЕДОВАНИЙ. – 2022. – Т. 3. – №. 4.
2. Гаппарова Г. Н. Инфекции мочевыводящих путей у детей, пиелонефрит: диагностика и лечение //Проблемы биологии и медицины. – 2022.
3. Мамасолиева Ш. А. и др. Оценка психосоматическое здоровье и психосоматическое заболевание профессорско-преподавательского состава вузов //Научный электронный журнал Меридиан. – 2020. – №. 6. – С. 78-80.
4. Маллаева М. Б. ЭКОЛОГИЯ ҲИСОБИНИ ШАКЛЛАНТИРИШ МАСАЛАЛАРИ //SO ‘NGI ILMIY TADQIQOTLAR NAZARIYASI. – 2023. – Т. 6. – №. 4. – С. 269-280.
5. Наимова З. С. ВЛИЯНИЕ ЭКОЛОГИИ СЕМЬИ И ОБРАЗА ЖИЗНИ НА СОСТОЯНИЕ ЗДОРОВЬЯ ДЕТЕЙ ШКОЛЬНОГО ВОЗРАСТА //Journal of new century innovations. – 2023. – Т. 31. – №. 3. – С. 107-113.
6. Тухтаров Б. Э., Абдумуминова Р. Н. Гули Нурмуминовна Гаппарова ИНСОН САЛОМАТЛИГИГА ТАЪСИР ЭТУВЧИ АГРОФАКТОРЛАРНИНГ ЭКОЛОГО-ГИГИЕНИК ЖИҲАТЛАРИНИ ТАДҚИҚ ЭТИШ, SCIENTIFIC PROGRESS VOLUME 2 | ISSUE 4 | 2021 ISSN: 2181-1601, P 80-86 file //C:/Users/admin/Downloads/inson-

salomatligiga-tasiretuvchi-agrofaktorlarning-ekologo-gigienik-zhi-atlarini-tad-i-etish.pdf.
7. Рахимова Д. Д., Шайхова Г. И. 7-17 YOSHLI MAKTAB OQUVCHILARINING JISMONIY RIVOJLANISHINI BAHOLASH //журнал репродуктивного здоровья и уро-нефрологических исследований. – 2022. – Т. 3. – №. 4.
8. Рахимова Д. Ж. и др. ОБОСНОВАНИЕ ЛЕЧЕНИЯ ПНЕВМОНИИ КОРОНАВИРУСНОЙ ЭТИОЛОГИИ (COVID-19) КОМБИНАЦИЕЙ ПУЛЬС ТЕРАПИИ С ИММУНОДЕПРЕССАНТАМИ //Re-health journal. – 2020. – №. 4 (8). – С. 59-64.
9. Рахимова Д., Аскарова Н. Гиповитаминозы у военнослужащих //Общество и инновации. – 2021. – Т. 2. – №. 3/S. – С. 90-99.
10. Abdumuminova R. N., Sh B. R., Bulyaev Z. K. On The Importance Of The Human Body, Nitrates //The American Journal of Medical Sciences and Pharmaceutical Research. – 2021. – Т. 3. – №. 04. – С. 150-153.
11. Gapparova G. N. Clinical and laboratory diagnosis of uricosuric nephropathy in children. – 2022.
12. Gapparova G. N. Covid-19 Pandemiyasi Davrida Bollard Pielonefritning Kliniko-Laborator Xususiyatlari, Diagnostikasi //Texas Journal of Multidisciplinary Studies. – 2022. – Т. 4. – С. 127-129.
13. Gapparova G., Akhmedjanova N. CLINICAL AND LABORATORY CHARACTERISTICS, DIAGNOSIS OF PYELONEPHRITIS IN CHILDREN UNDER COVID-19 PANDEMIC CONDITIONS //Theoretical aspects in the formation of pedagogical sciences. – 2022. – Т. 1. – №. 6. – С. 114-114.
14. Gapparova G., Akhmedjanova N. CLINICAL AND LABORATORY FEATURES, DIAGNOSIS AND TREATMENT OF PYELONEPHRITIS IN CHILDREN DURING THE COVID-19 PANDEMIC //Академические исследования в современной науке. – 2022. – Т. 1. – №. 17. – С. 186-187.
15. Nurmuminovna G. G., Abdurakhmanovna U. N. CLINICAL AND LABORATORY FEATURES OFNEPHROPATHY IN CHILDREN WITH DIABETES MELLITUS //Open Access Repository. – 2023. – Т. 9. – №. 2. – С. 116-122.
16. Nurmuminovna G. G. In the post period of covid-19 diseasespecific clinical-laboratory properties and diagnosis of pyelonephritis in children //ACADEMICIA: An International Multidisciplinary Research Journal. – 2022. – Т. 12. – №. 4. – С. 55-58.
17. Norbuvaevna A. R., Nurmuminovna G. G., Rukhsora M. HYGIENIC ASSESSMENT OF THE EFFECT OF NITRATES ON HUMAN HEALTH //Archive of Conferences. – 2021. – С. 24-26.
18. Nurmuminovna, Gapparova Guli. "Assessment of Partial Renal Function in Children with Pyelonephritis During the Covid-19 Pandemic." *Eurasian Research Bulletin* 17 (2023): 220-228.

19. . Nurmuminovna G. G. LABORATORY FEATURES OF URATE NEPHROPATHY IN CHILDREN //Western European Journal of Linguistics and Education. – 2024. – Т. 2. – №. 2. – С. 40
20. Gapparova G. N., Abdugapparovna M. S. BOLALARDA URIKOZURIK NEFROPATIYANI KLINIKO-LABORATOR DIAGNOSTIKASI //Лучшие интеллектуальные исследования. – 2023. – Т. 5. – №. 1. – С. 13-19.
21. Nurmuminovna G. G. CLINICAL AND LABORATORY FEATURES, DIAGNOSIS AND TREATMENT OF PYELONEPHRITIS IN CHILDREN DURING THE COVID-19 PANDEMIC //JOURNAL OF BIOMEDICINE AND PRACTICE. – 2023. – Т. 8. – №. 2.
22. Nurmuminovna G. G., Ismailovna A. N. Improved Treatment Of Pyelonephritis In Children During The Covid-19 Pandemic //Eurasian Medical Research Periodical. – 2023. – Т. 19. – С. 73-80
23. Nurmuminovna G. G. PYELONEPHRITIS IN CHILDREN: DIAGNOSIS AND TREATMENT //Web of Scholars: Multidimensional Research Journal. – 2022. – Т.
24. Nurmamatovich F. P., Jurakulovna R. D. The importance of the international hassp system in the production of quality and safe confectionery products //ACADEMICIA: An International Multidisciplinary Research Journal. – 2021. – Т. 11. – №. 10. – С. 1184-1186.
25. Narbuvayevna A. R. et al. Explore Ecological and Hygiene Assignment of Soil Contamination With Heavy Metals //Central Asian Journal of Medical and Natural Science. – 2022. – Т. 3. – №. 3. – С. 107-111.
26. Islamovna S. G., Jurakulovna R. D., Gulistan K. Current state of the problem of rationalization of schoolchildren's nutrition. – 2022.
27. Ra A. et al. Investigate soil contamination with heavy metals while community health. – 2022.
28. Jurakulovna R. D. Analysis Of Distribution Of Vitamins, Macro And Micro Elements Deficiency Among Children And Adolescents In Samarkand Region, According To Clinical Symptoms //Eurasian Research Bulletin. – 2023. – Т. 17. – С. 229-235.
29. Jurakulovna R. D. et al. Effectiveness Of Streptokinase And Propofol Drugs In Patients With Coronavirus Delta Straw (Examples From Practice) //European Scholar Journal. – 2021. – Т. 2. – №. 9. – С. 21-25.
30. Zhurakulovna R. D., Shomuratovna B. R., Narmuminovna G. G. HYGIENIC RECOMMENDATIONS FOR THE PREVENTION OF SCHOOL MYOPIA AND OTHER VISUAL IMPAIRMENTS IN CHILDREN OF PRIMARY SCHOOL AGE //American Journal of Interdisciplinary Research and Development. – 2022. – Т. 6. – С. 29-38.
31. Zhurakulovna R. D., Abdurakhmanovna U. N. Current State of the Problem of Rationalization of Schoolchildren's Nutrition //Eurasian Medical Research Periodical. – 2023. – Т. 19. – С. 81-89.
32. Zhurakulovna R. D. ASSESSMENT OF THE ACTUAL NUTRITION OF CHILDREN AND ADOLESCENTS TAKING INTO ACCOUNT REGIONAL PECULIARITIES //E Conference Zone. – 2022. – С. 41-44.

33. Zhurakulovna R. D. et al. ESTABLISHING THE RELATIONSHIP BETWEEN VARIOUS METASTATIC LUNG LESIONS WITH GENDER AND AGE //Web of Medicine: Journal of Medicine, Practice and Nursing. – 2024. – Т. 2. – №. 2. – С. 104-107.
34. Zhurakulovna R. D. NUTRITION OF CHILDREN AS A FACTOR DETERMINING THE HEALTH OF FUTURE GENERATIONS //Conferencea. – 2022. – С. 41-42.
35. Raximova D. J., Naimova Z. S., Halimova S. A. 7 YOSHDAN 14 YOSHGACHA BO 'LGAN BOLALARDA OZIQLANISH MUAMMOLARI VA ULARNI OLDINI OLISHDA VITAMIN VA MINERALLARNING O 'RNI //Oriental renaissance: Innovative, educational, natural and social sciences. – 2022. – Т. 2. – №. 4. – С. 380-385.
36. Eshnazarovich T. B., Norbuvaevna A. R., Nurmuminovna G. G. Research of ecological and hygiene aspects of agrofaktors affecting human health. – 2021.
37. Sh B. R. et al. Environmentally Friendly Product is a Pledge of Our Health //Texas Journal of Multidisciplinary Studies. – 2022. – Т. 9. – С. 48-50.
38. Sh B. R. et al. THE SIGNIFICANCE OF GIAMBLIAsis IN THE ETIOPATOGENESIS OF DISEASES IN CHILDREN //EPRA International Journal of Multidisciplinary Research (IJMR). – 2022. – Т. 8. – №. 6. – С. 62-65.