

Features Of The Frequency Prevalence And Risk Factors For The Formation Of Glomerulonephritis In Children

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Abstract: *The authors conducted a study on the risk factors for glomerulonephritis in children. Some regional features of glomerulonephritis in children have been established: the frequency is significantly higher among rural children; comorbid forms predominate in the clinical picture; chronic glomerulonephritis prevails in the structure of renal diseases; in virus-associated glomerulonephritis, the role of aggressive risk factors is the pathological course of pregnancy (OR-2.45, CI 99%, P<0.001), operative delivery (OR-1.33, CI 95%, P<0.01), TORCH infection of parents (OR-1.93; DI 95%, P<0.01), ECD and atopic dermatitis in the child (OR-1.43; DI 95%, P<0.01), frequent SARS in the anamnesis (OR-1.09; DI 95%, P<0.01), hemorrhagic vasculitis (within the last 3 months) (OSH-1.17; CI 95%, P<0.01), insect Allergy (OSH-1.27; CI 95%, P<0.01), chickenpox (within the last 3 months) (OSH-1.06; CI 95%, P<0.01), hypothermia (OSH-1.24; CI 95%, P<0.01) and a severe history (OSH-1.36; CI 95%, P<0.01).*

Keywords: *glomerulonephritis, risk factors, Allergy, virus associated glomerulonephritis.*

In recent years, among glomerulonephritis (GN), manifesting in childhood, there has been a significant increase in the frequency of development of chronic forms. In science and practice, the question of whether acute glomerulonephritis (AGN) is transformed into chronic (CGN) or whether the immunopathological process has a primary chronic course is not completely resolved [6].

The etiological factor of manifestation of the nephritic form of AGN is most often β -hemolytic Streptococcus [4].

The prevalence of CGN is low according to the treatment data-13-50 cases per 10,000 population, but due to the progressive course of CGN patients make up the main contingent of Nephrology and hemodialysis departments, and at the stage of terminal renal failure they become disabled, which is a tragedy for the family and puts a heavy burden on the state [1, 3]. The slow progression of the natural course of many variants of GN is the reason that studies aimed at obtaining data related to outcomes (i.e. using CPN or mortality as endpoints) must be very long. This significantly increases their cost, and requires a lot of effort from both doctors and patients. To increase the number of "events" in research, "composite endpoints" are often used. In addition, there are two competing circumstances in the design of research in GN. On the one hand, it is considered that most variants of GN are rare, on the other hand, it is necessary to include an adequate number of patients at an acceptable time (which is a necessary element of the success of the study) [10].

There is no consensus on the role of individual risk factors that affect the course of GN. T. M. Eison et al. [9] attach great importance to the persistence of bacterial or viral infections in the progression of glomerulonephritis. A similar opinion is held by L. S. Prikhodina et al. [5]. F.

C. Lechon et al [11] consider low birth weight as a risk factor for the progression of GN with a rapid decrease in renal function and a high degree of resistance to immunosuppressive therapy. The combination of several risk factors contributes to the chronic course of various clinical forms of GN in children. In patients with CGN, there are 5 variants of a combination of risk factors that determine the chronization of the renal process in various clinical forms of GN [7].

Option I was characterized by a combination of the following risk factors: pathological abnormalities during pregnancy, changes in urine tests prior to GN, diseases of the gastrointestinal tract, drug or food allergies. It was detected in 40.9% with nephrotic CGN, which is significantly more frequent than in hematuric ($P > 0.05$).

Option II included a combination of other risk factors: prematurity, small abnormalities of organ development, drug or food allergies, and chronic foci of infection. It occurred in patients with various clinical forms of CGN with almost the same frequency ($P > 0.05$).

In the third variant of the combination of risk factors, drug or food allergies, gastrointestinal diseases, the carrier of HBS or other markers of hepatitis, and heredity burdened by renal pathology or arterial hypertension were observed. This variant was detected statistically significantly more often ($P < 0.001$) in children with mixed CGN than in hematuric and nephrotic forms.

Variant IV represented a combination of pathological abnormalities during pregnancy, perinatal encephalopathy, diseases of the Central nervous system (CNS), chronic foci of infection, frequent acute respiratory viral infections (ARVI), and concomitant diseases of the urinary system. The combination of these risk factors was significantly more common in children with the hematuric form of CGN than in the nephrotic form ($P > 0.05$) and statistically significantly less common in the hematuric form ($P < 0.01$).

V variant - a combination of risk factors: drug or food allergies, gastrointestinal diseases, heredity burdened by renal pathology and arterial hypertension, small abnormalities of organ development, changes in urine tests preceding glomerulonephritis, chronic foci of infection - was observed with the same frequency in mixed and nephrotic forms of CGN ($P > 0.05$) and statistically significantly less frequently in the hematuric form ($P < 0.01$) [2].

The purpose of the study:

to study the regional characteristics of the frequency of GN and risk factors in children living in the Bukhara region of the Republic of Uzbekistan.

2. MATERIALS AND METHODS:

249 sick children with GN who received inpatient examination and treatment at the Bukhara regional children's multidisciplinary medical center were monitored. All patients were examined for General blood tests, urine tests, urine tests according to Nechiporenko and zimnitsky, biochemical tests and functional research methods.

Among the surveyed boys there were slightly more - 161 (64.6%) than girls - 88 (35.4%). The examined sick children were aged 1 year-18 years, including children under 5 years - 70 (28.1%), 6-10 years - 92 (36.9%), 11-15 years - 64 (25.7%), 16-18 years - 23 (9.3%). For a comparative study of the influence of risk factors patients were divided into 2 groups:

1-group: 138 (55.5%) sick children with virus-associated GN;

2-group: 111 (44.5%) sick children with GN without viral Association.

The data of the official medical statistics of the regional Health Department of the Bukhara region for 2017-2019 were studied retrospectively.

The assessment of risk factors for the development of GN was calculated by the "case-control" type. The value of the odds ratio (OR) was evaluated as follows: if the OR exceeds 1, it means

that the chances of detecting a risk factor are greater in the group with the presence of an outcome and the factor has a direct relationship with the probability of an outcome. An OR with a value less than 1 indicates that the chances of detecting a risk factor are greater in the second group and the factor has an inverse relationship with the probability of an outcome [8].

3. DISCUSSION:

The results of a retrospective study of data for 3 years showed that 43293 (76%) children were admitted to the hospital with diseases of the urinary system during the studied period.

Statistical analysis of the data shows an increase in cases of children's renal pathology.

The total incidence (frequency of prevalence) of GN for the studied period is 17.3%. It was found that the rate of hospitalization of children with urinary system pathologies on average is 7.61% of the total children's hospitalization.

The analysis of morbidity and hospitalization at the place of residence showed that children living in rural areas were more often hospitalized - 204 (81.9%).

At the same time, the frequency of hospitalization of children with diseases of the urinary system in the period 2017 - 2019 increased by almost 1.6 times. (Fig. 1).

The structure of diseases of the urinary system is dominated by glomerulonephritis (Fig. 2).

The nosological structure showed the predominance of chronic GN in children. Thus, in our studies, CGN - 137 (55.0%), AGN-75 (30.2%) and primary nephrotic syndrome (NS)-37 (14.8%) were established.

There is a decrease in the frequency of OHN and an increase in CGN over the studied period, which indicates the transition of the pathological process in chronization with the formation of CGN in children.

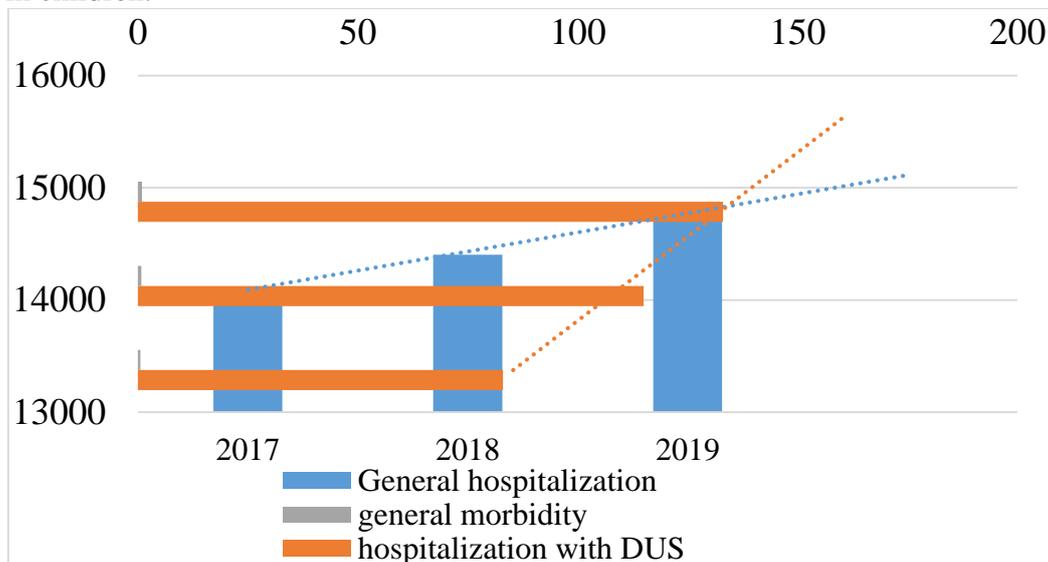


Figure 1. The frequency of morbidity and hospitalization of children with pathologies of the urinary system

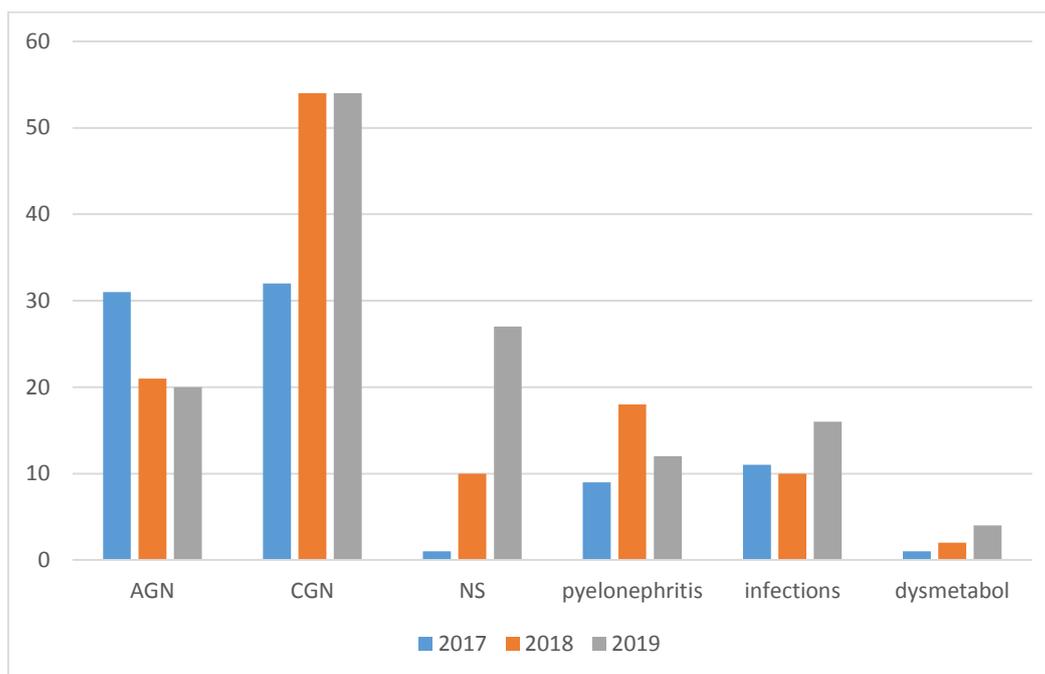


Figure 2. Structure of diseases of the urinary system in children

The examination revealed comorbid pathology in children of this category. At the same time, such concomitant diseases as iron-deficiency anemia of I-II degree - 88 (64.3%), frequent acute respiratory viral infections - 122 (89.0%), lagging in physical development - 69 (50.4%), dental caries - 68 (49.6%), sinusitis - 18 (13.2%), stomatitis - 78 (56.9%), herpes infection-55 (40.2%), diarrhea-28 (20.4%), convulsive syndrome - 1 (0.73%), hemorrhagic vasculitis-1 (0.73%).

In AGN, the incidence of comorbid pathology was: recurrent respiratory viral infections (RRVI)- 46 (61.4%), iron deficiency anemia of I-II degree - 21 (28.0%), food Allergy - 2 (2.7%), insect Allergy-1 (1.4%), hemorrhagic vasculitis-1 (1.4%), chickenpox-1 (1.4%), diarrhea-1 (1.4%), measles-1 (1.4%).

Primary NS occurs in comorbidity with RRVI-23 (62.2%), iron-deficiency anemia of I-II degree-5 (13.5%), edematous syndrome-6 (16.2%), herpes infection 1 (2.7%), food Allergy-1 (2.7%), dental caries-1 (2.7%),

Comparative characteristics of family history and life history allowed us to determine the role of risk factors for the development of GN in children.

Based on the results of the assessment of the frequency of risk factors in the formation of GN in children, it was established:

-with virus-associated glomerulonephritis, the role of aggressive risk factors is the pathological course of pregnancy (odds ratio -2.45, confidence interval 99%, $P < 0.001$), operative delivery (OR-1.33, CI 95%, $P < 0.01$), TORCH infection of parents (OR-1.93; CI 95%, $P < 0.01$), Exudative catarrhal diathesis and atopic dermatitis in the child (OR-1.43; CI 95%, $P < 0.01$), frequent a history of respiratory viral infections (OR-1.09; CI 95%, $p < 0.01$), hemorrhagic vasculitis (within the last 3 months) (OR-1.17; CI 95%, $P < 0.01$), insect Allergy (OR-1.27; CI 95%, $P < 0.01$), previous chickenpox (within the last 3 months) (OR-1.06; CI 95%, $P < 0.01$), hypothermia (OR-1.24; CI 95%, $P < 0.01$), and severe history (OR-1.36; CI 95%, $P < 0.01$).

A comparative assessment of the frequency of risk factors in children established predictors of the formation of virus-unassociated GN in children. In this case, the trigger factors are: the presence of allergic diseases in the family (OR-1.80; CI 95%, $P < 0.01$), the reaction to vaccination (OR-1.81; CI 95%, $P < 0.01$), such diseases as diarrhea (OR-1.06; CI 95%, $P < 0.01$) and convulsive syndrome (OR-1.52; CI 95%, $P < 0.01$) in a sick child.

Consequently, comorbid pathology and risk factors act as predictors of the formation of GN in children and the transition of the process to chronization.

4. CONCLUSION:

the results of the scientific studies were able to identify some regional characteristics of GBV in children: the incidence of GN is 17.3%, the frequency of GN is significantly higher in children living in rural areas, the clinical picture is dominated by comorbid forms of GN; in the structure of renal diseases prevalent CGN; risk factors for the development of virus associated GN in children are pathological course of pregnancy and childbirth, viral and allergic diseases of the child and the nonspecific factor of hypothermia ($P < 0.01$); risk factors for the development of non-associated GN virus in children are allergic diseases in the family, past reactions to vaccination, diarrhea and convulsive syndrome in the child ($P < 0.01$). Therefore, the identification of informative risk factors for the development of GN in children, especially in early childhood, is of conceptual importance. By improving preventive measures at the stages of prenatal management of pregnancy and childbirth, it is possible to achieve a reduction in renal pathology, in particular when GN is associated with the virus in children.

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