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THE LINK BETWEEN COVID 19 AND ACUTE GLOMERULONEPHRITIS

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Relevance. The research shows the rise in acute glomerulonephritis (AGN) among children after COVID-19 pandemic. It investigates possible associations between SARS-CoV-2 infection and AGN, looking at wider effects on pediatric renal health.

Aim: this study analyzes five years of patients' data (2018-mid2023) to investigate the increased morbidity of acute glomerulonephritis (AGN)/post strep GN (PSGN) in children, particularly in relation to post-COVID-19 period. It explores AGN incidence, manifestation, clinical features, outcome, and potential influences on disease development.

Materials and methods. A retrospective study comparing the incidence of post-COVID-19 AGN in children aged 3-12 years was carried out by the Republican Center for Pediatric Nephrology in Minsk. The male to female ratio among the 34 kids was 2.4:1. Clinical information was gathered from health records, concentrating on symptoms of confirmed SARS-CoV-2 infection. Standard testing was run, and when necessary, kidney biopsies were conducted.

Results and discussion. For all 34 patients: (2018-2020 n=13, 2021-2022 n=7, 2023 n=14) AGN developed after an infection of the pharynx and respiratory organs of various localizations (sinusitis, otitis, pneumonia), in some associated with streptococcus (culture from the pharynx, growth of ASLO). AGN incidence increased significantly between 2022 and 2023, from 0.20 to 0.90, which may have something to do with the COVID-19 pandemic. Acute onset with complaints of headache, deterioration of condition, loss of appetite and the development of nephritic syndrome: moderate proteinuria (1-2 g/l), hematuria from micro- to macrohematuria, moderate swelling of the eyelids, face, hypertension (in 75%). There were no significant differences in the onset, clinical and laboratory parameters, course of the disease and its outcomes when comparing patients who fell ill in 2018-2020 and from 2021 to mid2023. The results reveal a significant increase in pediatric patients' risk of developing AGN after COVID-19. These kids had a high incidence of immune-complex AGN, which was linked to streptococcal infections. In children with a history of COVID-19, hematuria, proteinuria, and reduced renal function were common manifestations of AGN symptoms. Genetic studies point to a possible inherited tendency affecting the severity of AGN after COVID-19. A reevaluation of the pathophysiological basis of AGN is required in light of the advent of post-COVID-19 AGN, which includes an investigation into a possible virally-induced autoimmune. According to this theory, renal damage could result from the immune system's cross-reaction with renal antigens in response to SARS-CoV-2. The study addresses the ways in which genetic factors influence the immunological response to COVID-19 and the ensuing development of AGN. The diagnosis and treatment approaches for AGN in the wake of the pandemic will be greatly impacted by these findings. This comprehensive viewpoint sheds light on the complex interactions that occur throughout the pathogenesis of AGN after COVID-19 between genetic susceptibility, immunological response, and viral infection. On the other side increasing number of AGN could probably be connected with a change in the structure of infectious disease pathogens associated with COVID 19.

Conclusions. According to the data of a number of researchers (Pubmed), over the past decades there has been a significant decrease in the number of cases of AGN in children due to the rational use of antibiotics, improvement of socio-economic and hygienic conditions, which we observed until 2020. We noted an increase in the number of cases without significant changes in the clinical course and short-term outcome of AGN in 2021-07.2023 (n=21) vs 2018-2020 (n=13) which may be due, on the one hand, to a change in the immune response after Covid-19 possibly including immune-related harm and direct effects of the virus on kidney tissue, and on the other hand, to a change in the structure of pathogens after the pandemic. Additionally, it is possible that certain genetic tendencies interacting with COVID-19 could clarify why some people have a higher risk for severe AGN.