

# ANALYSIS OF THE RISK FACTORS OF POST-COVID-19 SYNDROME IN CHILDREN WITH RECURRENT AND CHRONIC LUNG DISEASES

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**Abstract. The aim:** to establish risk factors associated with the occurrence of post-COVID-19 syndrome among children with recurrent or chronic bronchopulmonary diseases.

**Materials and methods.** 65 children aged 3–18 years with recurrent and chronic bronchopulmonary diseases who suffered from COVID-19 of varying severity were examined – 40 people with a mild course and 25 people with a moderate or severe course of COVID-19. General clinical, laboratory, radiological methods, spirometry and questionnaires using a specially developed questionnaire used. Clinical manifestations of COVID-19 in the acute period studied retrospectively with the help of official medical documentation. Correlation analysis conducted to establish risk factors for the occurrence of post-COVID-19 syndrome.

**Results.** The frequency of the post-COVID-19 syndrome in children with recurrent or chronic bronchopulmonary diseases established about 23.1 %. An indirect correlation of medium strength with the age of children ( $r = -0.3$ ,  $p = 0.5$ ), an indirect weak correlation with their gender ( $r = -0.1$ ,  $p = 0.4$ ) and a medium-strength direct correlation with the need for hospitalization ( $r = 0.5$ ,  $p = 0.3$ ), the duration of hospitalization ( $r = 0.4$ ,  $p = 0.4$ ), the severity of COVID-19 ( $r = 0.5$ ,  $p = 0.2$ ) was established. However, the results were not statistically significant ( $p > 0.05$  in all cases). The frequency of the post-COVID-19 syndrome also did not depend on the state of hematological indicators, pathological X-ray changes in the organs of the chest cavity and the use of such methods of intensive management of patients as oxygen therapy, systemic corticosteroid therapy, inhalation of bronchodilators in the acute period of COVID-19. At the same time, children with bronchial asthma experienced a three-fold increase in the frequency of daytime symptoms, and a 2.5-fold increase in the need to use short-acting  $\beta_2$ -agonists after suffering from COVID-19. A decrease in the maximum volume velocity at the level of 25.0 % (from 90.8 % to 70.7 %), a 2.3-fold increase in the frequency of a positive bronchodilator response to salbutamol (increase in  $FEV_1 \geq 12.0$  %;  $p < 0.05$ ), which indicates hidden airway hyperreactivity at the level of small bronchi and may be a factor in long-term respiratory symptoms in the post-COVID-19 period.

**Conclusions.** Statistically significant correlations of the frequency of development of the post-COVID-19 syndrome with the age, sex of children with recurrent or chronic lung diseases, treatment and clinical / laboratory indicators in the acute period of COVID-19 were not found. However, the established increase in the frequency of hidden hyperreactivity of small bronchi in children with bronchial asthma prompts to continue the search for the risk factors of the post-COVID-19 syndrome.

**Key words:** post-COVID-19 syndrome, children, recurrent and chronic bronchopulmonary diseases.