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POST-COVID PNEUMONIA COMPLICATIONS IN CHILDREN

Chief Physician, Phthisiatrist: **Bahodir Khojakbarovich Gafforov**
Tashkent Regional Center for Phthisiology and Pulmonology

Scientific Review: PhD, Senior Lecturer **Sherali Sherikbayevich Massavirov**
Department of Phthisiology, Tashkent State Medical University

Sherzodganiyevich518@gmail.com

Abstract: During the COVID-19 pandemic, pneumonia and its delayed complications in children became an urgent issue in pediatric practice. Studies show that 20–30% of children who have recovered from COVID-19 develop long-term pulmonary changes, while 10–15% develop chronic broncho-obstructive syndrome. This article focuses on the clinical picture, epidemiology, diagnostic methods, pediatric observations, treatment, and rehabilitation measures for post-COVID pneumonia in children.

Introduction

The COVID-19 pandemic has affected more than 300 million people worldwide, with approximately 10% being children. Initially, it was assumed that the disease progressed mildly in children; however, subsequent pediatric observations confirmed the frequent occurrence of post-pneumonia pulmonary complications.

- According to WHO (2023), **27–30%** of children with COVID-19 developed pneumonia.
- According to the 2023 report of the Ministry of Health of Uzbekistan, the incidence of pneumonia in children increased **1.8 times** during the pandemic.
- Observations at the Tashkent Pediatric Medical Center showed that **14%** of children who recovered from COVID-19 pneumonia continued to experience dyspnea, hypoxemia, and cough for up to 3 months.

Main Part

1. Epidemiology and Pathogenesis

COVID-19 pneumonia in children is often associated with direct damage to alveolar tissue by the SARS-CoV-2 virus and the cytokine storm. The virus induces inflammation in the pulmonary alveoli, and in some cases, secondary bacterial infections lead to a more severe course.

2. Clinical Cases

- **Case 1.** 8-year-old patient M.: Two weeks after recovering from COVID-19, the child presented with dyspnea and nocturnal cough. CT scans revealed fibrotic changes in the lower lung lobes. After two months of respiratory exercises and physiotherapy, lung capacity was restored.

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- **Case 2.** 4-year-old patient A.: Developed broncho-obstructive syndrome after post-COVID pneumonia. Recurrent cough and bronchial hypersensitivity persisted for 6 months. Inhaled steroids and immunomodulators reduced the symptoms.
- **Case 3.** 12-year-old patient S.: For 3 months after the illness, experienced rapid fatigue during physical activity and signs of hypoxemia. Spirometry showed a 20% decrease in lung volume. A specialized rehabilitation program resulted in recovery within 4 months.

3. Statistical Table: Post-COVID Pneumonia Complications

Type of complication	Incidence (%)	Source
Chronic bronchitis, prolonged cough	12–18%	WHO, 2023
Pulmonary fibrotic changes	8–12%	Nelson Pediatrics
Hypoxemia, oxygen deficiency	6–8%	Uzbekistan MoH, 2023
Immune suppression, frequent ARVI	18–22%	Uzbek Pediatrics Journal
Reduced lung volume (spirometry)	10–15%	Tashkent Pediatric Research, 2023

4. Diagnostics

- **Radiological methods:** CT and chest X-ray are the most reliable methods to detect fibrotic changes.
- **Functional studies:** Spirometry and pulse oximetry assess lung capacity and oxygen exchange.
- **Laboratory tests:** CRP, ferritin, D-dimer, and complete blood count are used to evaluate disease activity.

5. Treatment and Rehabilitation

- **Antibacterial/antiviral therapy:** Used only in cases of secondary infection.
- **Physiotherapy:** Breathing exercises, inhalation therapy, bronchial drainage.
- **Immune support:** Vitamin complexes, immunomodulators.
- **Long-term follow-up:** Children recovering from COVID-19 pneumonia should remain under pediatric supervision for at least 6–12 months.

Conclusion

Post-COVID pneumonia in children is frequently accompanied by delayed complications such as fibrosis, chronic bronchitis, hypoxemia, and immune suppression. Timely diagnosis and rehabilitation are crucial for restoring pulmonary function. Pediatricians must focus not only on acute treatment but also on comprehensive long-term follow-up.

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