E- Global Congress
Hosted online from Dubai, U. A. E., E - Conference.
Date: 30th October 2025
Website: https://eglobalcongress.com/index.php/egc
ISSN (E): 2836-3612

PREVENTION AND TREATMENT OF PULMONARY FIBROSIS DEVELOPING AFTER VIRAL PNEUMONIA IN CHILDREN

Nurulla Qurbonov
Fergana Public Health Medical Institute
Fergana, Uzbekistan

Abstract

Pulmonary fibrosis is one of the most severe long-term complications that can occur after viral pneumonia in children. The condition results from excessive inflammatory reactions and uncontrolled repair processes in the lung tissue, leading to the replacement of normal alveoli with fibrotic tissue. Over the past decade, an increase in post-viral fibrosis cases has been observed, especially after infections caused by influenza, respiratory syncytial virus, adenovirus, and coronaviruses. The progressive nature of fibrosis poses a serious threat to respiratory function and overall quality of life in pediatric patients.

Keywords: Viral pneumonia, children, pulmonary fibrosis, prevention, treatment, rehabilitation, antioxidants.

Objective

The study aims to identify the most effective preventive and therapeutic approaches to reduce the risk and progression of pulmonary fibrosis following viral pneumonia in children.

Materials and Methods

A comprehensive review of clinical studies, pediatric case reports, and recent publications from PubMed and Scopus databases (2015–2024) was conducted. The analysis focused on the mechanisms of fibrogenesis, diagnostic tools for early detection, pharmacological interventions, and rehabilitation methods used in pediatric pulmonology. The role of cytokines, oxidative stress, and immune dysregulation in the development of post-viral fibrosis was also examined.

ISSN (E): 2836-3612

Results

Early recognition of pulmonary fibrosis is crucial for preventing irreversible changes. High-resolution computed tomography (HRCT) and spirometry are the most reliable diagnostic tools for monitoring post-infectious changes in lung structure and function. The use of antifibrotic drugs such as nintedanib and pirfenidone has shown promising results in limiting fibroblast activation and collagen deposition. Corticosteroids in short courses, along with antioxidants (vitamin C, vitamin E, selenium) and omega-3 fatty acids, help reduce inflammation and oxidative stress. Respiratory physiotherapy, breathing exercises, and oxygen therapy are essential components of long-term rehabilitation, improving oxygen exchange and preventing complications.

Prevention Strategies

Preventive measures should begin during the acute phase of viral pneumonia. Early antiviral treatment, proper hydration, and control of inflammatory responses reduce the risk of structural lung damage. After recovery, children should undergo follow-up imaging and pulmonary function assessment. Strengthening the immune system through balanced nutrition, adequate sleep, and vitamin supplementation (particularly vitamins D and A) supports recovery. Avoidance of secondary infections, air pollution exposure, and passive smoking is also vital in preventing chronic fibrotic changes.

Conclusion

Post-viral pulmonary fibrosis in children remains a significant clinical concern that requires early diagnosis, targeted pharmacotherapy, and continuous rehabilitation. A multidisciplinary approach involving pediatricians, pulmonologists, and physiotherapists ensures better outcomes. Timely prevention and evidence-based management can effectively reduce the burden of post-viral pulmonary fibrosis and improve long-term respiratory health in children.

References

1. George, P. M., Wells, A. U., & Jenkins, R. G. (2020). Pulmonary fibrosis and COVID-19: The potential role for antifibrotic therapy. The Lancet Respiratory Medicine, 8(8), 807–815.
2. Shrestha, D. B., et al. (2023). Post-viral pulmonary fibrosis in children: Emerging evidence and management strategies. Frontiers in Pediatrics, 11, 1156239.
3. Vasarmidi, E., et al. (2020). Pulmonary fibrosis in the aftermath of severe viral infections: Lessons from COVID-19 and beyond. European Respiratory Review, 29(158), 200191.
4. Zhang, Y., et al. (2022). Antifibrotic therapy in pediatric patients with post-infectious interstitial lung disease: Clinical experience and perspectives. Pediatric Pulmonology, 57(4), 1098–1106.
5. Raghu, G., & Wilson, K. C. (2021). COVID-19 interstitial pneumonia and pulmonary fibrosis: A call to arms for antifibrotic therapy. American Journal of Respiratory and Critical Care Medicine, 203(6), 749–751.
6. Chalmers, J. D., & Moffitt, K. L. (2021). Mechanisms of lung injury and repair in viral pneumonia. Nature Reviews Immunology, 21(3), 189–202.
7. Chua, R. L., et al. (2020). Early rehabilitation interventions for pediatric patients with respiratory failure: A systematic review. Journal of Pediatric Rehabilitation Medicine, 13(2), 145–156.