FUNCTIONAL AND IMMUNOLOGICAL RESPONSES IN CHILDREN AFTER COVID-19 AND OTHER RESPIRATORY VIRAL INFECTIONS

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Relevance: The COVID-19 pandemic has highlighted the vulnerability of children to respiratory viral infections and their subsequent effects. While children often experience milder forms of COVID-19, the post-infection functional and immunological consequences remain understudied. Evaluating these responses is crucial for understanding the long-term impacts on children's health and for developing targeted interventions.

Objective: To assess the functional and immunological responses in children following COVID-19 and other respiratory viral infections.

Methods: A cohort study was conducted involving 120 children aged 5–12 years who had recovered from COVID-19 (n=60) and other respiratory viral infections (n=60). Functional assessments included spirometry (FVC, FEV1) and physical performance tests (6-minute walk test). Immunological evaluations encompassed measurement of cytokine profiles (IL-6, IL-10, TNF-α) and specific immunoglobulins (IgG, IgA). Data were collected at 1 and 3 months post-infection. Statistical analysis was performed using SPSS software.

Results: At 1 month post-infection, children with COVID-19 demonstrated mild reductions in FVC (by 8%) and FEV1 (by 6%) compared to baseline, whereas children recovering from other respiratory infections showed no significant changes. Cytokine analysis revealed elevated IL-6 levels in the COVID-19 group ($p<0.05$). By 3 months, functional parameters had normalized in both groups, but persistently elevated IL-6 and TNF-α levels were observed in 20% of children post-COVID-19, suggesting prolonged inflammatory activity.

Conclusions: Children recovering from COVID-19 exhibit mild, transient impairments in pulmonary function and prolonged low-grade systemic inflammation compared to those with other respiratory infections. These findings underscore the importance of continued monitoring and supportive care for pediatric patients post-COVID-19.

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