Pulmonary function changes in post-covid-19 patients: a longitudinal clinical study.

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Introduction

COVID-19 primarily targets the respiratory system, with a significant proportion of patients developing pneumonia, acute respiratory distress syndrome (ARDS), or other complications. As global recovery progresses, attention has shifted to post-acute sequelae, often termed "Long COVID." Pulmonary function testing (PFT) serves as a crucial tool in evaluating residual lung impairment and monitoring recovery trajectories [1, 2, 3, 4].

The long-term respiratory consequences of COVID-19 continue to raise clinical concerns, particularly in individuals recovering from moderate to severe infections. This longitudinal clinical study explores pulmonary function changes in post-COVID-19 patients over time, aiming to identify patterns of recovery and persistent impairment [5,6, 7].

Methods

A cohort of 150 post-COVID-19 patients was enrolled and followed for a period of 12 months. Pulmonary function tests including spirometry, diffusion capacity for carbon monoxide (DLCO), and lung volumes were performed at 3, 6, and 12 months post-recovery. Patients were categorized based on disease severity during the acute phase (mild, moderate, severe), and comparative analysis was conducted to assess recovery patterns [8, 9, 10].

Results

At the 3-month follow-up, 62% of patients showed reduced DLCO, and 45% demonstrated restrictive ventilatory defects. By 6 months, improvements were noted in most parameters, but 28% still had abnormal DLCO values. At 12 months, only 12% of patients continued to exhibit mild-to-moderate diffusion impairments, with significant improvements in forced vital capacity (FVC) and total lung capacity (TLC) observed across all severity groups.

Patients with severe initial infection and those who required ICU admission showed the slowest and least complete recovery. Mild cases largely returned to baseline pulmonary function by 6 months.

Discussion

The findings reveal that pulmonary function impairment is common in the early post-COVID-19 period, particularly in patients with severe disease. Although most patients show gradual improvement over time, a subset remains at risk for long-term pulmonary dysfunction, underscoring the need for continued monitoring and rehabilitative interventions.

Conclusion

COVID-19 can lead to significant but largely reversible pulmonary function impairments. Longitudinal assessment through PFTs is essential for identifying patients at risk of chronic respiratory issues and guiding appropriate clinical management.

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