



Pulmonary Physiology

TOPIC: Pulmonary Physiology

TYPE: Original Investigations

EVALUATION OF LUNG FUNCTION AFTER SARS-COV-2 PNEUMONIA

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PURPOSE: To investigate the patients' lung function at 3 and 6 months after hospital discharge for Coronavirus Disease 2019 (COVID-19) pneumonia.

METHODS: A prospective lung function assessment has been conducted with spirometry measurements, including lung volumes, lung diffusion capacity for carbon monoxide (DLCO) with alveolar volume (VA), and transfer coefficient (KCO) determination. Patients with a restrictive ventilatory defect or impaired DLCO were re-evaluated at 6 months with global spirometry and chest HRCT scan.

RESULTS: 40 patients have been enrolled in the study. Among them, 19 (48%) had normal pulmonary function tests (group A), and 21 (52%) showed residual lung function abnormalities at 3 months after hospital discharge (group B). In group B, 4 patients (19%) had an isolated loss of lung volume (Subgroup B1), 13 patients (62%) had both lung volume, and DLCO decreased (Subgroup B2), and 4 patients (19%) had isolated reduction in DLCO (Subgroup B3). At the 6-month follow-up visit, in Subgroup B1, although all patients improved, only one normalized the total lung capacity (TLC). In Subgroup B2, TLC and DLCO increased significantly ($p < 0.01$), but only 3 patients reached normal values. In Subgroup B3, DLCO improved for most patients, normalizing in 50% of them. Always at the 6-months follow-up visit, significant correlations between an internal chest HRCT scan severity score and TLC ($r^2 = 0.33$; $p < 0.01$) and DLCO ($r^2 = 0.32$; $p < 0.01$) has been found.

CONCLUSIONS: Nearly 50% of patients recovered in the post-critical phase. Most of those with abnormal pulmonary function tests at the 3-months follow-up visit had an improvement at the 6-month evaluation, but only 29% reached normal values.

CLINICAL IMPLICATIONS: In patients with previous COVID-19 pneumonia, lung function spontaneous recovery is faster at first. However, at 6-months after hospital discharge, this recovery process goes more slowly, leaving more than one-third of patients with abnormal lung function tests.

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