Medium-term impact of COVID-19 on pulmonary function, functional capacity and quality of life

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Abstract

Background Coronavirus disease 2019 (COVID-19) has spread worldwide, having a dramatic impact on healthcare systems. The aim of this study is to evaluate mid-term clinical impact of COVID-19 on respiratory function.

Methods 379 patients were evaluated 4 months after severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) diagnosis. Patients were divided in two groups based on the presence of pneumonia during COVID-19. Clinical conditions, quality of life, symptomatology, 6-min walk test, pulmonary function test with spirometry and diffusing capacity of the lung for carbon monoxide were analysed. Data were compared to clinical evolution during COVID-19 (development of acute respiratory distress syndrome, need of invasive mechanical ventilation, partial oxygen saturation (SpO2)/inspiratory oxygen fraction (FIO2) ratio and pneumonia severity index (PSI)).

Results After a median 135 days, 260 (68.6%) out of 379 patients referred at least one symptom. Patients who developed pneumonia during COVID-19 showed lower SpO2 at rest (p<0.001), SpO2 during 6-min walk test (p<0.001), total lung capacity (p<0.001), airway occlusion pressure after 0.1 s (P0.1) (p=0.02), P0.1/maximal inspiratory pressure ratio (p=0.005) and higher Borg category-ratio scale (p=0.006) and modified Medical Research Council breathlessness scale (p=0.003), compared to patients without pneumonia. SpO2/FIO2 ratio and PSI during SARS-CoV-2 pneumonia were directly associated with mid-term alteration of SpO2 at rest (p<0.001) and during 6-min walk test (p<0.001), residual volume (p<0.001), total lung capacity (p<0.001 and p=0.003, respectively) and forced vital capacity (p=0.004 and p=0.03, respectively).

Conclusion Lung damage during COVID-19 correlates to the reduction of pulmonary function 4 months after acute infection.