

Post-COVID-19 pulmonary fibrosis and its predictive factors: a prospective study

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- **ABSTRACT**

Background:

We aimed to prospectively assess the lung fibrotic-like changes, as well as to explore their predictive factors, in the patients who survived Coronavirus Disease 2019 (COVID-19) infection. In this prospective cross-sectional study, we recruited patients who had been treated for moderate or severe COVID-19 pneumonia as inpatients and discharged from Rohani hospital in Babol, northern Iran, during March 2020. The clinical severity of COVID-19 pneumonia was classified as per the definition by World Health Organization. We also calculated the CT severity score (CSS) for all patients at admission. Within the 3 months of follow-up, the next chest CT scan was performed. As the secondary outcome, the patients with fibrotic abnormalities in their second CT scan were followed up in the next 3 months.

Results:

Totally, 173 COVID-19 patients were finally included in the study, of whom 57 (32.9%) were male and others were female. The mean age was 53.62 ± 13.67 years old. At 3-month CT follow-up, evidence of pulmonary fibrosis was observed in 90 patients (52.0%). Consolidation (odds ratio [OR] = 2.84), severe disease (OR 2.40), and a higher CSS (OR 1.10) at admission were associated with increased risk of fibrotic abnormalities found at 3-month CT follow-up. Of 62 patients who underwent chest CT scan again at 6 months of follow-up, 41 patients (66.1%) showed no considerable changes in the fibrotic findings, while the rest of 21 patients (33.9%) showed relatively diminished lung fibrosis.

Conclusion:

Post-COVID-19 lung fibrosis was observed in about half of the survivors. Also, patients with severe COVID-19 pneumonia were at a higher risk of pulmonary fibrosis. Moreover, consolidation, as well as a higher CSS, in the initial chest CT scan, was associated with increased risk of post-COVID-19 lung fibrosis. In addition, some patients experienced diminished fibrotic abnormalities in their chest CT on 6-month follow-up, while some others did not.