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Letter to the editor

Comment on: Evaluation of pulmonary function and exercise capacity after COVID-19 pneumonia



We were ecstatic to read S. Okan et al.¹ article "Evaluation of pulmonary function and exercise capacity after COVID-19 pneumonia." Having access to this informative and valuable article was a great fortune. Critically, we acknowledge that people who recover from COVID-19 pneumonia but are later discharged from the hospital may experience restrictive pulmonary dysfunction. We recommend that people who have survived this illness be evaluated for their pulmonary function and rehabilitation needs and treated accordingly. We are aware of the study's flaws. However, a few alternative perspectives could help to refine and strengthen the study's results.

First, the small sample size, which reduces the study's strength, raises serious concerns about the study's validity. Data on pulmonary function, radiological outcome, quality of life, and cardiopulmonary exercise testing following severe COVID-19 pneumonitis were not well defined. There was a lack of baseline characteristics, underlying comorbidities, concomitant medication, disease severity at hospital admission, and other essential factors. At the entrance, the World Health Organization (WHO) scale is the peak value of C-reactive protein (CRP). At the same time, in the hospital, the duration of stay, pulmonary rehabilitation following hospital discharge, and radiological findings are all examples of crucial factors that were taken into account in a study by Kathleen et al.² In addition, the authors failed to report concise inclusion criteria and suitable methodologies. Pulmonary function was evaluated, for example, in a study by Fumagalli et al.³ by having participants walk for two minutes on room air while being monitored by a respiratory therapist. The effects of respiratory rehabilitation merit investigation. Indeed, after discharge, patients participated in a simple home exercise program. However, older patients with COVID-19 can benefit significantly from respiratory rehabilitation and see significant improvements in their lung function. Pulmonary function testing (PFT) improved substantially in post-COVID-19 survivors following weeks of respiratory rehabilitation. However, this rehabilitation did not result in a complete recovery, which may suggest the persistence of lung damage.⁴ Autopsies and CT findings revealed ubiquitous inflammation, which resulted in alveolar obliteration and interstitial fibrosis. They may account for the diffusion deficit seen in the most severe cases.

D-dimer levels at admission independently predict DLco and VA at follow-up. Patients with COVID-19 pneumonia have a high micro- and macro thrombotic risk.⁵ After hospital discharge, patients may experience a moderate to a significant decline in DLco for up to six weeks. Early cases of COVID-19 exhibited distinct patterns of disease progression.² Acute COVID-19 is associated with respiratory system symptoms, including dry cough, dyspnea, hypoxemia, and abnormal

imaging. Confirming its function as a lung damage marker,^{4,5} D-dimer concentrations at hospital admission accurately predict DLco impairment during follow-up. In COVID-19 patients, the trends for radiological and functional parameters diverge, and the proportion of those with permanent functional abnormalities remains high (e.g., fibrosis).⁵

Declaration of Competing Interest

None.

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References

- Okan S, Okan F, Duran Yücesoy F. Evaluation of pulmonary function and exercise capacity after COVID-19 pneumonia. *Heart Lung*. 2022 Jul-Aug;54:1–6. <https://doi.org/10.1016/j.hrtlng.2022.03.004>.
- Jahn K, Sava M, Sommer G, et al. Exercise capacity impairment after COVID-19 pneumonia is mainly caused by deconditioning. *Eur Respir J*. 2021 Dec 31;59(1): 2101136. <https://doi.org/10.1183/13993003.01136-2021>.
- Fumagalli A, Misuraca C, Bianchi A, et al. Long-term changes in pulmonary function among patients surviving to COVID-19 pneumonia. *Infection*. 2022 Aug;50(4):1019–1022. <https://doi.org/10.1007/s15010-021-01718-2>.
- Salem AM, Al Khathlan N, Alharbi AF, et al. The long-term impact of COVID-19 Pneumonia on the pulmonary function of survivors. *Int J Gen Med*. 2021 Jul 9;14:3271–3280. <https://doi.org/10.2147/IJGM.S319436>.
- Raghu G, Wilson KC. COVID-19 interstitial pneumonia: monitoring the clinical course in survivors. *Lancet Respir Med*. 2020 Sep;8(9):839–842. [https://doi.org/10.1016/S2213-2600\(20\)30349-0](https://doi.org/10.1016/S2213-2600(20)30349-0).

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