

Happy hypoxia: an urgent need to recognize this threat in the coronavirus disease 2019 pandemic

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Dear editor,

Hypoxia due to lung damage in coronavirus disease 2019 can be caused by many mechanisms like acute respiratory distress syndrome, diffuse intravascular coagulopathy affecting pulmonary vessels, impaired hypoxic pulmonary vasoconstriction, and secondary antiphospholipid syndrome. The natural response to hypoxia is increased respiratory drive leading to tachypnea, respiratory distress, tachycardia, etc. However, some patients despite having low oxygen saturation (<90%) may not have significant respiratory distress. This paradoxical condition is nowadays termed as 'happy hypoxia' [1].

Some hypotheses to explain this condition are (a) the lung mechanics in some patients are not affected as a result their lung compliance is maintained; this high compliance results in relatively well-preserved lung volume and gas exchange, hence the lack of dyspnea. The hypoxia in these patients is explained by impaired regulation of pulmonary blood flow and loss of hypoxic pulmonary vasoconstriction [2]. (b) It is possible that the virus may interfere with mitochondrial oxygen sensing and cause mitochondrial-induced injury resulting in impaired carotid body function leading to impaired respiratory drive and reduced dyspnea [3]. (c) The virus can lead to inflammation of the nucleus tractus solitarius due to which the afferent hypoxia stimuli from the carotid bodies may not be effectively relayed at the nucleus tractus solitarius, resulting in an impaired efferent respiratory response [4].

There is an urgent need to identify these patients as the lack of dyspnea may mask the severity of the infection, which in turn will delay patients from seeking early medical care [5]. Early respiratory

support and initiation of anti-inflammatory medications is the key to a successful outcome and both of these may be delayed in these patients. By the time tachypnea and other clinical signs develop, it may be too late and extensive damage to the lungs would have already taken place. It is therefore imperative that health-care workers not rely on the patient's obvious well-being but closely monitor oxygen saturation, respiratory rate, and signs of hyperventilation at regular time intervals. In addition, the treatment should also rely on other markers of disease activity like tachycardia, fever, or serum inflammatory markers.

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Conflicts of interest

There are no conflicts of interest.

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