Case Report

Awake Self-Proning in a Nonintubated COVID Patient: A Case Report from a Tertiary Care COVID Hospital in Eastern India

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Abstract

The year 2020 has witnessed the novel coronavirus disease 2019 (COVID-19) outbreaks occurring in almost all countries of the world, causing the WHO to declare it a pandemic. The disease mainly causes pneumonia and subsequently may deteriorate to hypoxemic respiratory failure. In India, a hugely populated country, there will be always a threat for depletion of ventilator and other critical care resources if the disease spreads widely. As per the previous literature, proning is known to be a proven method to improve oxygenation in ventilated acute respiratory distress syndrome patients. Here, we would like to report an adult COVID-19 patient, who presented with hypoxemia and managed with awake self-proning.

Keywords: Acute respiratory distress syndrome, awake self-proning, coronavirus disease 2019

Introduction

The novel coronavirus disease 2019 (COVID-19) pandemic is still at its height causing thousands of deaths each week. Since its start just a few months ago, our insights into the disease are rapidly increasing. The disease mainly causes pneumonia and subsequently hypoxemic respiratory failure. As per the recent literature, severe hypoxemia in COVID-19 can be due to two phenotypes related to lung dynamics.[1] First, a good-compliant lung with a low lung recruitability (L-type), and at the later stage of the disease course, this L-type may change into a more classic acute respiratory distress syndrome (ARDS) type, i.e., a poor-compliant lung with a high lung recruitability (H-type). In the former type, patients usually have low oxygen saturation (SpO_2 <90%), but they usually do not have significant respiratory distress and often appear clinically well; some authors informally referred them as happy hypoxemics.[2] Prior literature are consistent with the fact that proning may improve patient's oxygenation in ARDS.[3] In the initial phase, in patients who are not in significant distress but have severe hypoxemia, awake proning could be a good therapeutic option. This can avoid intubation and mechanical ventilation. We would like to report a COVID-19 patient who presented with severe hypoxemia and was successfully managed with awake self-proning.

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Case Report

A 49-year-old male, who was detected to be positive for COVID-19 by throat swab reverse transcriptase-polymerase chain reaction, was admitted to our intensive care unit with chief complaint of difficulty breathing for 3 days. He had no history of comorbidities. On admission, he was conscious, alert, and normotensive. Initial evaluation revealed a heart rate of 120/min and a respiratory rate of 30/min. The initial SpO_2 was recorded to be 80% with room air. All other vital signs were within the normal limits. Chest X-ray showed bilateral coalescent opacities [Figure 1]. Initial arterial blood gas (ABG) analysis was as follows: pH: 7.38/PCO_2: 29 mmHg/PO_2: 52 mmHg/HCO_3^-: 22 meq/L, base deficit: 4 mmol/L, and lactate: 1.5 mmol/L. His routine investigations were within normal limits. Serum procalcitonin was within the normal limits. The D-Dimer value was 2.17 μg/ml.

The patient was started on oral azithromycin, hydroxychloroquine, and low-molecular-weight heparin, along

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Figure 1: Chest X-ray at the time of admission

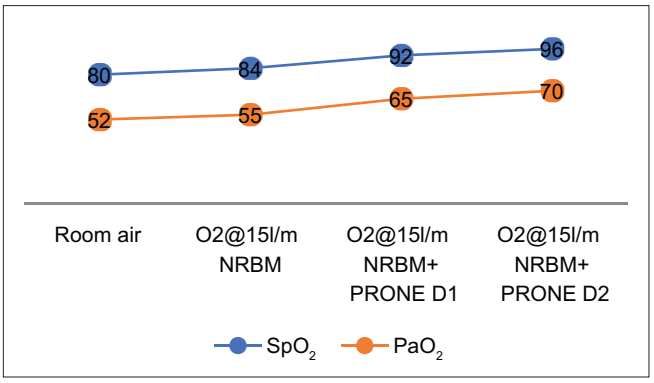

Figure 2: SpO_2 (arterial oxygen saturation) and PaO_2 (partial pressure of oxygen in arterial blood) during the first 2 days of intensive care unit stay

with oxygen inhalation at 10 L/min through a nonrebreather mask (NRBM). His SpO_2 improved maximum to 86% despite increasing oxygen flow to 15 L/min. Even with a SpO_2 of 86%, the patient was not feeling dyspneic, and he was able to complete a full sentence. Hence, intubation and mechanical ventilation were deferred at that moment. He was advised for self-proning [Table 1] with the oxygen mask (NRBM) for 30 min in every 2 h in the day time (6 a.m. to 10 p.m.; effective proning 4 h) and continuous at the night time (10 p.m. to 6 a.m.; effective proning 8 h). After 1 day session of proning (12 h), his ABG analysis was as follows pH: 7.38/PCO_2: 35 mmHg/PO_2: 65 mmHg/HCO_3^-: 22 mmol/L, and base deficit: 2 mmol/L. A total duration of 12 h per day self-proning was continued for 2 days following which he showed marked improvement in oxygenation [Figure 2]. Eventually, oxygen therapy was gradually weaned off, and the patient was shifted to the ward.

Table 1: Awake self-proning protocol

Time	Method	Effective hours	Total hours/day
6 a.m. to 10 p.m.	30 min proning in each 2 h	4	12 h
10 p.m. to 6 a.m.	Continuous	8	

Discussion

Awake proning in hypoxemia has been reported in literature well before this COVID-19 pandemic. In one of the studies,[4] awake proning along with oxygen inhalation was performed in 15 nonintubated patients presenting with hypoxemia. Improvement in oxygenation was seen in all, but it was not sustained which might be due to lesser duration of proning.

Regarding awake proning in COVID-19 patients, a recent study reported that the cure rate of critically ill COVID-19 patients was high in one province as compared to others.[5] After retrospective analysis, they attributed this result to early awake proning along with high-flow nasal cannula oxygen therapy/noninvasive mechanical ventilation. In another study, continuous positional rotation strategy was performed in all COVID-19 patients presenting with severe hypoxemia.[2] Continuous positional rotational strategy involved proning position followed by left lateral decubitus, right lateral decubitus, and upright sitting position. Nearly two-third of the patients improved in oxygenation and did not need invasive mechanical ventilation. Recently, a case report has been published involving a COVID-19 patient presenting with severe hypoxemia, who was managed by self-proning along with high-flow nasal cannula oxygen therapy. Duration of self-proning was 16–18 h per day (including 8–10 h at night).[6] Oxygenation was found to improve after self-proning. All these studies were consistent on the fact that proning promotes lung recruitment and hence improves oxygenation.

Conclusion

As COVID-19 is now a global threat, ventilator stockpiles and critical care resources tend to be quickly depleted as the result of early intubation of these patients. Certain group of patients who appeared to be not in respiratory distress but severely hypoxemic, can improve from awake self-proning. This can lead to the preservation of critical care resources and allotment of these resources to other sick patients.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initial will not be published, and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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