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A CASE REPORT OF COVID -19 PNEUMONIA AND ITS RESPONSE TO PRONE POSITION

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ABSTRACT Awake proning, a well adapted technique during the COVID 19 pandemic, is done to improve oxygenation in deteriorating non-intubated patients, on NIV/HFNC support. We report a case of COVID 19 and have described the mechanism and efficacy of prone positioning in COVID-19 pneumonia, and its effect on improving oxygenation, and thereby preventing invasive ventilation.

KEYWORDS :

INTRODUCTION

In the early 2020, a new entity rose in our world. After the pandemic of corona virus, the incidence of the coronavirus disease (COVID-19) caused by the novel coronavirus (severe acute respiratory syndrome coronavirus 2 - SARS-CoV-2). Because the entity was new, specific treatment guidelines and management protocols of the cases varied with case-to-case based on the severity of the disease and associated co morbidities. Prone positioning has been previously tried. The Vasilios Koulouras et al study reports and recommends the beneficial effects of prone ventilation in intubated ARDS patients, however its benefits in an awake and non intubated patient is yet to be studied in detail. Here we present a case of COVID -19 Pneumonia and its response to prone positioning.

CASE REPORT

A 44 year old COVID-19 positive patient presented with complaints of breathlessness on Day 3. He gave a one day history of fever (relieved with Tablet paracetamol 650 mg) and persistent cough for the past five days. He is a known case of diabetes mellitus for the past five years, on regular treatment. On examination, patient was conscious, oriented but drowsy and dyspnoeic. His temperature was 99.1 F, pulse rate of 105/minute, respiratory rate of 24/minute, blood pressure of 110/60 mmHg, capillary blood glucose of 184 mg/dl and SpO_2 of 91% in room air. Systemic examination of the respiratory system and cardiovascular system was normal. The patient was initially admitted to the COVID ward and started on 6L/min of oxygen initially via Hudson's mask. SpO_2 improved to 94%. The patient was treated per hospital protocol. He received I.V methylprednisolone, metered dose inhaler with budesonide, Tab motelucast with levoctrizine, syrup guaifenesin 50mg + bromhexine 2mg + terbutaline 1.25mg + menthol 0.5mg, Tab amoxicillin clavulanate 625 mg, Tablet Vitamin C 500 mg and Tablet Zinc 50 mg.

The CT chest report was suggestive of COVID 19 pneumonia with 64% lung involvement (CT severity score of 16/25). Biochemical parameters were as follows : fasting sugar 140 mg/dl, post prandial blood sugar levels 220 mg/dl, glycosylated hemoglobin levels of 8.9%, C reactive protein levels 6 mg/L and D-Dimer 2 ugm FEU/ml. Parameters of complete blood count, renal and liver tests were within normal limits. In view of elevated D-Dimer levels patient was started on injection enoxaparin subcutaneously.

On the second day, the patient required 15L/min oxygen via non-rebreather mask to achieve SpO2 93%. As his condition was further worsening (Spo2 86%), he was started on Continuous positive airway pressure (CPAP) therapy and subsequently on to High Flow Nasal Cannula (HFNC) in intermittent prone position with which he maintained SpO_2 of 90% with 50 L/min of Oxygen.

On day three of admission, he was given injection hydrocortisone 100 mg and was made to lie prone, almost all the time. Following which his SpO2 levels gradually improved from 84% to 92% with 55L/min of Oxygen through HFNC. Patient was nursed and cared for in prone position for 3 continuous days. On Day 7 $Sp0_2$ improved to 94% and the HFNC Oxygen flow was titrated to 30 L/min. The patient eventually became better. On day 8, his SpO2 maintained at 94% with the HFNC flow at 20 L/min, and the patient was returned back to supine position. The patient continued to improve, was switched back to non-breather mask on day 10 and was gradually weaned off oxygen on day 15, and he maintained SpO2 of 96% at room air.

DISCUSSION

The initial researches on COVID-19 from different parts of the world noted that the incidence and severity of the disease is associated with the patient's age and the presence of associated chronic illnesses[2]. various treatment guidelines and techniques were adopted. One among these techniques is making the patient to lie in prone position. Even before COVID-19 pandemic, positioning the cases with respiratory disorders in prone was tried in some of the respiratory care units. A study conducted by P.Pelosi et al in 2002, clearly explains the benefits of prone positioning in ARDS. Profound hypoxia usually requires intubation and invasive mechanical ventilation in severely and critically ill patients. In a patient with moderate to severe COVID 19 disease, proning of non-intubated patients has shown positive results. Although, many studies were conducted previously quoting the benefits of proning of intubated patients, there is still no conclusive study showing the benefits of proning with non-invasive ventilation. Intubation carries a risk to both the patient and to the healthcare worker performing the procedure. In our setup, as we had to care for multiple Covid positive patients at the same time, the patients were all admitted to a common ward. In such circumstances, repeated aerosol generation (Intubation and Airway suctioning) and its potential harmful effects also need to be considered. Invasive mechanical ventilation for multiple patients requires abundant resources and manpower and hence alternative and attractive feasible treatment strategies such as awake proning was considered. Desaturation inspite of increasing positive-end-expiratory-pressure PEEP has been a severe COVID-19 pneumonia feature. In China, a study on effect's on proning of COVID-19 patients was conducted in intubated severe COVID-19 patients with severe desaturation. However, proning unconscious patients requires extreme care and has its own complications. The following mechanisms are believed to cause the improvement of conditions in ARDS patients in prone position: recruitment in dorsal lung, increasing end-expiratory lung volume, increasing chest wall elastane, decreasing alveolar shunt and improving tidal volume[7]. Thereby overall decreasing mortality. Recently, a study by Guerin et al mentioned two reasons for reluctance in proning in patients with ARDS, one was believed to be hypoxia which according to most physicians is not severe enough to justify prone positioning while the other reason being hemodynamic instability seen in patients with ARDS. Nicholas et al[10] conducted a study among COVID 19 cases and reported that the median SpO_2 was 80% in triage ward. However after supplemental oxygen the saturation increased to upto 84% immediately, and upto 94% with after 5 minutes of proning. On comparing the pre and post proning, saturation levels significantly increased after proning. This study thus shows that early self-proning in the casualty, showed an improvement in oxygen saturation in most of these COVID-19 positive patients.

CONCLUSION

We conclude that awake proning is a relatively simple technique in the management of COVID -19 disease even in the presence of co morbid conditions and is a useful technique to try when all else appears to be failing, in a resource limited setting. With an overburdened medical system with huge oxygen consumption rates and limited ICU care, a trial of proning should definitely be considered in non-intubated COVID 19 ARDS patients. There is immense scope for research in this area and there is little evidence to compare the outcomes of proning among cases with varying severity of COVID 19 disease presently. We felt that a success story such us this needs to be shared so that it may build faith and form tiny building block in today's evidence based practice.

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