LETTER TO EDITOR

Defecation and Micturition may Cause Syncope in COVID-19 Patients on High Oxygen Requirement

Shagufta Naaz[1], Abhyuday Kumar[2], Nishant Sahay[3], Rajnish Kumar[4], Erum Ozair[5], Akhil Valiaparambath[6]

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Dear Editor,

Activities of daily living such as walking, eating, micturition, and defecation are associated with increased oxygen consumption and may cause desaturation in patients suffering from severe respiratory failure.

A 72-year-old, 70-kg male patient was admitted with complaints of fever, cough, shortness of breath, with positive reverse transcription-polymerase chain reaction (RT-PCR) for SARS-CoV-2. He was a known case of hypertension, sinus bradycardia, and 8-year-old history of anterior wall myocardial infarction. He received remdesvir, convalescent plasma, antibiotics, dexamethasone, thromboprophylaxis, and other supportive care. High-resolution computed tomography thorax showed diffuse and extensive ground-glass opacity, interstitial thickening, and emphysematous changes in bilateral lung fields. Investigations revealed deranged kidney function and raised inflammatory markers. He was treated with different modalities of oxygen delivery based on blood gas parameters and clinical assessment. On the 24th day of ICU stay, he was clinically and hemodynamically stable, comfortable on high flow nasal cannula (HFNC) at FiO_2 1 and flows of 60 L min^{-1}. His hemoglobin saturation (SpO_2) was around 90 to 92%. The patient expressed his desire to defecate using a bedpan. It was while he was trying to defecate that he suddenly lost consciousness. His carotid pulse was not palpable. Cardiopulmonary resuscitation (CPR) was initiated immediately, and the airway was secured. Even after 30 minutes of CPR, he could not be revived.

A 55-year-old, 64-kg male patient was admitted with complaints of fever, shortness of breath, and a positive RT-PCR for SARS-CoV-2. He was on HFNC at FiO_2 0.9 and flows of 50 L min^{-1}. His SpO_2 was >97% with stable hemodynamics. He had no comorbidities. Inflammatory markers were elevated. The patient was treated with Remdesvir, convalescent plasma, antibiotics, dexamethasone, subcutaneous low molecular weight heparin 12 hourly, and other supportive care. On the morning of day eight of ICU admission, the patient desaturated during the act of micturition while using a bedpan. His SpO_2 fell down up to 74%, but it was managed by increasing FiO_2 to 1.0 and keeping nasal oxygen flows of 60 L min^{-1}. Saturation could be increased to 94% shortly thereafter. He remained self-voiding as he denied consent for urinary catheterization.

The catastrophe happened the very next day when again, the patient wanted to urinate. At the initiation of the process, he lost consciousness. His oxygen saturation started dropping, but this time, measures to increase his saturation proved ineffective. He needed to be intubated and was then put-on mechanical ventilation. Sometime after initiation of mechanical ventilation, we witnessed sudden bradycardia followed by asystole. CPR was initiated immediately, but he could not be revived.

Defecation syncope (DS) is the vasovagal response that occurs during defecation and results in a loss of consciousness in an effort to increase rectal pressure which is followed by the closure of the epiglottis, tightening the diaphragm, and muscles of the chest wall, and activation of the parasympathetic nervous system.[1] Initially, there is a rise in arterial pressure and bradycardia. Subsequently, there is a rapid fall in blood pressure and a decrease in blood flow to the brain.[1] Similar parasympathetic responses are expected during micturition. For a patient with preserved oxygen reserves, it may not be hazardous, but for a severe COVID-19 patient, it proved to be fatal.

A study on 24 patients suffering from chronic respiratory failure to assess the physiological changes brought about by defecation on some basic cardiorespiratory variables showed a significant desaturation induced by defecation.[2] Such transient desaturations have been detected in patients with moderate to severe chronic pulmonary disorders even without significant resting hypoxemia (arterial oxygen tension 55–60 mm Hg). Even mild hypoxemic episodes can be accompanied by severe cardiac arrhythmias, and hence, it is not astonishing that events such as syncope, death, or ST-segment changes have been reported to occur during defecation and micturition.[3]

Constipation has been implicated as a risk factor for DS.[4] In a case series of twenty patients with DS, half of the patients with no known cause for syncope had diseases like hypothyroidism, panhypopituitarism, diabetes, or systemic lupus erythematosus. Treating comorbid conditions or correcting any underlying cause is reported to be the mainstay of therapy.[5]

COVID-19 patients who have high oxygen requirements or are on high flow oxygen therapy should be prepared to meet the increased oxygen requirement. It may be prudent to keep

[1–4,6]Department of Anaesthesia, All India Institute of Medical Sciences, Patna, Bihar, India

[5]Department of Anaesthesiology, SKMCH, Muzaffarpur, Bihar, India

Corresponding Author: Shagufta Naaz, Department of Anaesthesia, All India Institute of Medical Sciences, Patna, Bihar, India, Phone: +91 7838117314, e-mail: drshaguftanaaz@gmail.com

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such patients catheterized if they have a history of significant desaturation off oxygen or after minimal effort. Hydration should be ensured. Patients' bowel habits should be taken care of, and laxatives should be given to the patient if needed. When patients have to pass motion or urinate, desaturation and syncope should be anticipated. Oxygen flows and FiO_2 of the patient should be increased to meet the increased demand, especially in the elderly and sick patients.

Orcid

Shagufta Naaz https://orcid.org/0000-0001-7845-5708
Abhyuday Kumar https://orcid.org/0000-0002-9247-6713
Nishant Sahay https://orcid.org/0000-0001-8297-5538
Rajnish Kumar https://orcid.org/0000-0002-3085-0829
Erum Ozair https://orcid.org/0000-0003-3636-3375
Akhil Valiaparambath https://orcid.org/0000-0003-3243-560X

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