Case Report

Diaphragmatic rupture in case of COVID-19 pneumonia- A rare presentation

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ABSTRACT

We describe the case of a male patient admitted to our emergency department during the COVID-19 pandemic with complaints of fever, severe breathlessness and dry cough associated with symptoms of gastric reflux for 5 days. Chest HRCT showed subtle multiple areas of diffuse patchy opacities with ground-glass haze with associated left subdiaphragmatic hernia and atelectasis of the left pulmonary lobe. Barium meal revealed subdiaphragmatic hernia. A nasopharyngeal swab for 2019-nCoV was positive. A diagnosis of diaphragmatic hernia in COVID-19 pneumonia was made. To our knowledge, spontaneous herniation of the diaphragm is a rare entity. Treatment for COVID-19 and empiric antibiotic therapy were promptly started and a decision of elective surgery was made.

KEY WORDS: COVID-19, pneumonia, subdiaphragmatic hernia

CASE HISTORY

A 60-year-old male patient was admitted to our emergency department during the COVID-19 pandemic with complaints of fever, severe breathlessness and dry cough with symptoms of gastric reflux disease (heart burning feel and itching in his throat) for 5 days. The initial oxygen saturation was only 89% while he was breathing ambient air. He had a medical history of type 2 DM and was on regular medication for the same for the past 30 years. The patient did not have any harmful habits or any chronic pulmonary disease. Physical examination revealed a normal BMI, blood pressure and body temperature but increased heart and respiratory rates of 94 beats/min and 34 breaths/min, respectively. The abdomen was soft with no palpable mass. An electrocardiogram showed a regular sinus rhythm. Blood arterial gas analysis revealed respiratory alkalosis and hypoxemia; cytokine parameters were raised. X-Ray chest showed bilateral non-homogenous opacities. Chest HRCT showed pulmonary parenchyma of both lobes had diffuse ground-glass opacities and multiple small consolidations with CT severity of 8/25 [Figure 1] as reported in COVID-19 pneumonia1,2 with associated diaphragmatic hernia [Figure 2] and causing left lung collapse [Figure 3]. No rib fractures were detected. The patient was treated with high-flow oxygen, inj remdesivir, high dose received 12 g of vitamin C/50 ml every 12 h for 7 days at a rate of 12 ml/hour, steroids, intravenous fluid therapy with crystalloid solution and supportive medication.

Before discharge, the patient had acute abdominal pain; USG (W/A) was done, which was normal. HRCT was again done and diagnosis of diaphragmatic hernia [Figure 4]

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was made secondary to COVID-19 confirmed with barium meal and suspected as a cause of abdominal pain. The patient settled with conservative management. Gastro surgery reference was sought and surgery was deferred for 2 months, and the patient was discharged. The patient is under follow-up.

DISCUSSION

COVID-19 can present with different clinical symptoms such as flu-like symptoms with fever, dry cough and sore throat and hiccups to gastrointestinal issues to severe acute respiratory distress syndrome (ARDS) and multi-organ failure with death. Cough can be associated with rib fracture, abdominal herniation and diaphragmatic rupture. The most common complication of cough is rib fracture. Rarely, patients can present with serious complications such as pneumothorax, pneumomediastinum, subcutaneous emphysema and bleeding. Diaphragmatic rupture can occur following intensive coughing, causing the herniation of bowel loops into the chest. As a consequence, the patient may complain of chest and abdominal pain, which can mimic an acute abdomen, appendicitis or gynaecological disease. Abdominal organ herniation into the chest can impair ventilation and oxygen delivery. This was a serious scenario in our patient due to his concomitant COVID-19 pneumonia.

CONCLUSION

To the best of our knowledge, a case of diaphragmatic hernia in a patient with COVID-19 pneumonia has been rarely reported in the literature. The incidence of abdominal organ herniation due to diaphragmatic rupture is unknown.
because many cases likely go undiagnosed or are diagnosed late. Diaphragmatic rupture is a life-threatening condition that needs prompt diagnosis and repair. CT scanning is the gold-standard technique to evaluate the diaphragm.[10] Our experience emphasises the importance of maintaining focus on the patient's symptoms and the prominent role of CT scan during the COVID-19 epidemic. As reported in the literature, we continue to learn about the clinical manifestations of COVID-19 and its complications in patients with the disease.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

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