THE MACKLIN EFFECT IN COVID-19

Noreena Iqbal, Manahil Chaudhry, Ayesha Malik

Introduction

In patients with moderate-severe COVID-19 infection, computed tomography chest can show wide-range of parenchymal changes, and seldom, extra-parenchymal findings such as pneumomediastinum. We present a case of COVID-19 infection complicated by spontaneous pneumomediastinum (SP) to highlight this rare complication.

Case Presentation

A previously healthy 42-year-old Asian male presented to the emergency department with a 10-day history of fatigue, dry cough, and 2-day history of high-grade fever along with shortness of breath. On presentation, his oxygen saturation was 60% on air, heart rate was 118/minute, blood pressure of 130/80 mmHg, and respiratory rate of 28/minute. Chest examination revealed crepitus on palpation. His PCR for SARS CoV 2 was positive and remarkable bloods were, a C-reactive protein 624 mg/L (0-6 mg/L) and d-dimers 2041 ng/ml (0-230 ng/ml). A computed tomography pulmonary angiogram (CTPA) was carried out which was negative for pulmonary embolism, but revealed bilateral consolidation, extensive pneumomediastinum, surgical emphysema throughout the chest wall, and bilateral small pneumothoraces (Figures *1-2*). A multidisciplinary team's opinion was to manage conservatively to which he responded well with gradual reduction in oxygen requirement. He was eventually weaned off and was discharged on day 12.

Discussion

Macklin effect has been proposed as a possible aetiology for SP in non-ventilated patients.[1,2] It starts with alveolar rupture secondary to direct alveolar injury, leading to air leaking and dissection along the bronchovascular sheaths and eventually spreading of air within the mediastinum.[3] This can also lead to subcutaneous emphysema, as seen in our patient. The most common symptom of pneumomediastinum is acute retrosternal chest pain and should warrant early alert to rule out this dreaded complication. Although the treatment for SP is usually symptomatic and conservative, oxygen therapy could possibly lead to faster recovery.[4]

Conclusion

Although no set guidelines have been devised, the management of SP in COVID-19 patients is largely conservative. Increased mortality is reported in patients with concurrent SP and pneumopericardium.

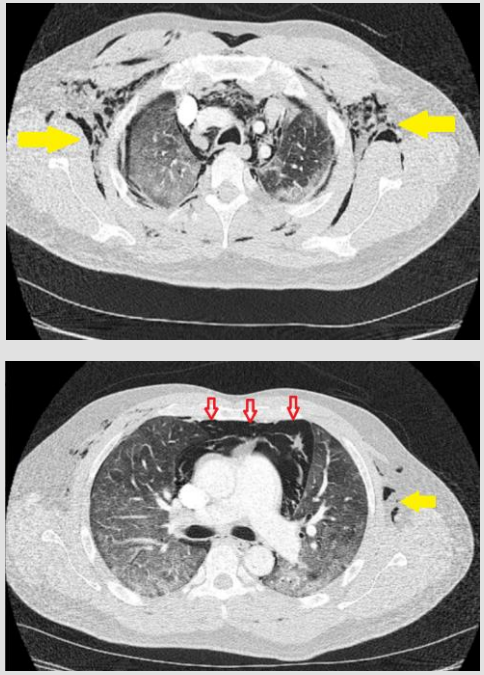

Figure 1 (top) and 2 (bottom) Chest CT axial sections of pulmonary parenchymal window showing extensive ground glass opacities in both lung fields, along with subcutaneous emphysema (yellow arrows), and pneumomediastinum (red arrows).

References

1. Loffi M, Regazzoni V, Sergio P, et al.: Spontaneous pneumomediastinum in COVID-19 pneumonia . Monaldi Arch Chest Dis. 2020, 90:10.4081/monaldi.2020.1399
2. Mimouni H, Diyas S, Ouachaou J, et al.: Spontaneous pneumomediastinum associated with COVID-19 pneumonia. Case Rep Med. 2020, 2020:4969486. 10.1155/2020/4969486
3. Wintermark M, Schnyder P: The Macklin effect: a frequent etiology for pneumomediastinum in severe blunt chest trauma. Chest. 2001, 120:543-7. 10.1378/chest.120.2.543
4. Underner M, Perriot J, Peiffer G: Pneumomediastinum and cocaine use [Article in English, French] . Presse Med. 2017, 46:249-62. 10.1016/j.lpm.2017.01.002