

A Unique Case of Spontaneous Pneumomediastinum in a Patient With COVID-19 and Influenza Coinfection

Journal of Investigative Medicine High Impact Case Reports
Volume 9: 1–2
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DOI: 10.1177/23247096211016228
journals.sagepub.com/home/hic


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Abstract

Spontaneous pneumomediastinum is reported in patients with coronavirus disease-2019 (COVID-19) and influenza infection independently, usually associated with noninvasive and mechanical ventilation. We report a case of spontaneous pneumomediastinum in a patient with COVID-19 and influenza coinfection. A 58-year-old male admitted with shortness of breath, diagnosed with COVID-19 and influenza infection. A computed tomography angiogram showed pneumomediastinum. He was treated conservatively with 15 L of oxygen, remdesivir, convalescent plasma, and oseltamivir. The case is being reported for its uniqueness since this is the first documented case of spontaneous pneumomediastinum in COVID-19 and influenza coinfection.

Keywords

pneumomediastinum, COVID-19, influenza

Case Presentation

A 58-year-old male with a past medical history of polymyositis with no pulmonary complication, on prednisone, type 2 diabetes mellitus presented to our emergency department with cough, fever, shortness of breath, and body pain. His blood pressure was 124/82 mm Hg; the temperature was 101 °F, respiratory rate of 29 breaths per minute, and oxygen saturation of 56% on room air. On examination, he was in acute respiratory distress, using his accessory muscles, with diminished bilateral air movement and widespread rales. Initially, no subcutaneous emphysema was noticed. His laboratory values were remarkable for white blood cells count of 6.27 K/uL, C-reactive protein of 228 mg/L, lactate dehydrogenase was 832 U/L, and his D-dimer was 7650 ng/mL. Chest X-ray showed bilateral patchy infiltrates. COVID-19 polymerase chain reaction and influenza B were positive. A computed tomography angiogram of the chest was remarkable for diffuse ground-glass infiltrates bilaterally and air dissecting into the neck base bilaterally consistent with pneumomediastinum (Figure 1). He was started on dexamethasone, remdesivir, convalescent plasma, and oseltamivir and remained stable on 15 L of oxygen using a nonrebreather mask. A chest X-ray repeated 3 days after the admission showed resolution of

the pneumomediastinum. His symptoms improved, and he was discharged on 4 L of oxygen.

Case Discussion

Pneumomediastinum is characterized by air in the mediastinum and has been reported in patients with COVID-19.¹ Kangas-Dick and colleagues² recently described a case series of pneumomediastinum in COVID-19 patients secondary to barotrauma due to mechanical ventilation after being admitted to the hospital. Our case is similar except that our patient developed spontaneous pneumomediastinum (SPM) on initial presentation and was not on positive pressure ventilation. There were 4 cases of COVID-19 and influenza coinfection reported by Cuadrado-Payán and colleagues.³ SPM has been reported in

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Received January 14, 2021. Revised April 13, 2021. Accepted April 20, 2021.

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Figure 1. Computed tomography of chest showing diffuse ground-glass infiltrates bilaterally, and air dissecting into the neck base bilaterally consistent with pneumomediastinum.

patients with influenza, as well.⁴ SPM is caused by alveolar rupture due to increased alveolar pressure, and air dissects through the pulmonary interstitium into the mediastinum.

Both COVID-19 and influenza could cause SPM independently, and the exact mechanism by which it causes SPM is still not clear. The possible mechanism could be due to an increase in distal airway pressure during coughing leading to alveolar rupture.⁵ More studies are needed to assess the augmented risk of developing SPM in COVID-19 and influenza coinfection. Recent Centers for Disease Control and Prevention guidelines have recommended testing for COVID-19 and influenza in hospitalized patients with respiratory illnesses, which may increase the complications associated with COVID-19 and influenza coinfection. Conservative treatment is preferred with 100% oxygen using nonrebreather masks, analgesics, antibiotics, and antivirals. SPM should be considered in patients with COVID-19 and influenza who develop worsening respiratory distress as untreated SPM can cause airway compression due to tamponade in some cases.⁵

Conclusion

Patients with COVID-19 and influenza coinfection might be at increased risk of SPM. Testing for influenza in COVID-positive patients is necessary, particularly during the influenza season. Early recognition of SPM and prompt treatment is essential for a favorable patient outcome.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Ethics Approval

Our institution does not require ethical approval for reporting individual cases or case series.

Informed Consent

Written informed consent was obtained from the patient for their anonymized information to be published in this article.

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