Pneumothorax, Pneumomediastinum and Subcutaneous Emphasema as Rare Comorbidities in COVID 19 Pneumonia

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Abstract

Coronavirus 2019 (COVID 19) patients usually manifest with symptoms of cough, fever and shortness of breathwarranting radiographic imaging with continued imaging reassessments after admission. Rare comorbidities found on imaging include pneumothorax, pneumomediastinumand subcutaneous emphysema. Though Pulmonary barotrauma to the alveoli may be a well-known explanation for these disorders, injury to the alveoli by disease may result in similar presentations. These findings within the presence of the COVID 19 infection, where measures are set in situ to prevent ventilator associated trauma or where patients are not intubated and are on High Flow oxygen, suggests the disease process of COVID 19 causing lung friability and therefore predisposition to break. during this case report, a 47-yearold African American male with past medical history significant for kidney transplantation in 2014, obesity class 1 and asthma presents to his Nephrologist with cough ashortness of breath. Patient was diagnosed with bilateral pneumonia and sent to Emergency department where he was diagnosis with COVID 19 pneumonia.

Keywords: : COVID-19 pneumonia, spontaneous pneumomediastinum and COVID-19 pneumonia, COVID-19 pneumonia and its complications

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Introduction

Background In mechanically ventilated acute respiratory distress syndrome (ARDS) patients infected with the novel coronavirus disease (COVID-19), we frequently recognised the development of pneumomediastinum and/or subcutaneous emphysema despite employing a protective mechanical ventilation strategy. The purpose of this study was to determine if the incidence of pneumomediastinum/subcutaneous emphysema in COVID-19 patients was higher than in ARDS patients without COVID-19 and if this difference could be attributed to barotrauma or to lung frailty. Spontaneous pneumomediastinum (SPM), pneumothorax (PNX) and subcutaneous emphysema are rare complications of COVID-19 pneumonia.

She presented with typical clinical signs of COVID-19 pneumonia and after 2 weeks of hospitalization she developed SPM and subcutaneous emphysema. The management of pneumomediastinum (PNM) was conservative and follow-up computerized axial tomography showed resolution of PNM. Patient 2 was a 67-year-old man presenting with fever, cough and dyspnea. computerized tomography pulmonary angiography was performed after 2 weeks of hospitalization and showed bilateral peripheral consolidations along with massive PNM and right-sided PNX. Thoracic drainage catheter was inserted in his right chest. Despite all supportive care, the patient succumbed to illness. Patient 3 was a 74-year-old man who was admitted to our hospital with COVID-19 pneumonia and spontaneous right-sided PNX. A thoracic drainage catheter was inserted immediately then removed after ten days which has led to progression of subcutaneous emphysema, PNX and newly diagnosed PNM. Patient was carefully monitored for the subsequent 2 weeks. Follow-up chest x-ray showed regression of PNM and PNX. SPM, PNX and subcutaneous emphysema are rare complications of COVID-19 pneumonia. Increased alveolar pressure and diffuse alveolar injury in severe COVID-19 pneumonia may make the alveoli more at risk of rupturing which ends up in gas dissemination along the peribronchovascular sheath to the mediastinum. Most cases of SPM and PNX resolve with conservative management. Spontaneous pneumomediastinum (SPM) and pneumothorax (PNX) unrelated to positive pressure ventilation has been recently reported as an unusual complication in cases of severe COVID-19 pneumonia.

The presumed pathophysiological mechanism is diffuse alveolar injury resulting in alveolar rupture and air leak. We present a case of COVID-19 pneumonia complicated on day 13 post admission by SPM, PNX and subcutaneous emphysema in a very patient with no identifiable risk factors for such complication. The patient received medical treatment for his COVID-19 infection without the employment of an invasive or non-invasive ventilator. Moreover, he's a non-smoker with no lung comorbidities and never reported a cough. He was eventually discharged range in stable condition. A comprehensive literature review revealed 15 cases of SPM developing in patients with COVID-19 pneumonia. The new disease outbreak that causes atypical pneumonia named COVID-19, which started in China's Wuhan province, has quickly spread to a pandemic.

By the end of 2019, several cases of pneumonia with unknown aetiology were reported in Wuhan, China.1–4 Most cases progressed to acute respiratory distress syndrome (ARDS).2 Later on, a novel coronavirus was identified, which was named SARS-CoV-2 and the disease implicated by the virus as 'COVID-19'. Despite travel restrictions and quarantine measures, the number of COVID-19 cases continued to rise worldwide, leading to declaration of a COVID-19 pandemic on 11 March 2020. The intrusive nature of COVID-19 has left the physicians to deal with some of its untoward complications.

Here, we present a rare case of SARS-CoV-2 pneumonia complicated by spontaneous pneumomediastinum (SPM), pneumothorax (PNX) and subcutaneous emphysema (SCE) without the use of an invasive or non-invasive positive pressure ventilator. Despite the potential for a worse outcome, the patient fortunately survived and had a good clinical outcome. After an extensive literature review, we identified 15 cases in the literature that developed SPM with COVID-19 and most had a favourable clinical outcome with close observation and conservative management. A 63-year-old man with a medical history of hypertension and type 2 diabetes mellitus presented to the emergency department with 2 days of worsening non-exertional shortness of breath associated with fever and fatigue. The patient was exposed to positive patients with COVID-19 at work. He then developed upper respiratory tract symptoms and was tested positive 8 days before presentation. He denied cough, chest pain, nausea, vomiting or headaches. He does not consume alcohol, smoke tobacco or use recreational drugs.

References

1) Lu H, Stratton CW, Tang Y-W. Outbreak of pneumonia of unknown etiology in Wuhan, China: the mystery and the miracle. J Med Virol 2020.

2) Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan,China. Lancet 2020.

3) Hui DS, I Azhar E, Madani TA, et al. The continuing 2019-nCoV epidemic threat of novel coronaviruses to global health The latest 2019 novel coronavirus outbreak in Wuhan, China.

4) Almeida JD, Berry DM, Cunningham CH, et al. Virology: coronaviruses. Nature 1968 .

5) Zhou P, Yang X-L, Wang X-G, et al. . A pneumonia outbreak associated with a new coronavirus of probable bat origin. Nature 2020

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