



Severe pneumomediastinum and subcutaneous emphysema subsequent to prolonged mechanical ventilation



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SARS-CoV2, a novel coronavirus has created a healthcare emergency on an international scale. Symptoms of Coronavirus Disease 2019 (COVID-19) range from asymptomatic carriers to severe viral pneumonia leading to acute respiratory distress syndrome, multiorgan failure, and death. The most common presenting symptoms are fever, cough, myalgia and fatigue [1]. Chest computed tomography (CT) findings commonly include bilateral lobular and subsegmental areas of consolidation and ground glass opacities [1].

Pneumomediastinum is an uncommon finding defined by mediastinal free air. The pathophysiology of pneumomediastinum originates from physical and/or barotrauma to the alveolar spaces or conducting airways. Causes include blunt thoracic or cervical trauma, esophageal rupture, bowel perforation with air from the abdominal cavity tracking to the chest, asthma, chronic obstructive pulmonary disorder, and acute respiratory distress syndrome [2]. There have been rare case reports of spontaneous pneumomediastinum arising from viral infections [2]. Common presenting symptoms of pneumomediastinum include subcutaneous emphysema, neck or chest pain, sore throat, and dyspnea

[3]. Pneumomediastinum is diagnosed radiographically as thin, lucent streaks outlining mediastinal structures and can be difficult to distinguish from pneumothorax or pneumopericardium on imaging [4]. Pneumomediastinum from barotrauma is typically self-limited and spontaneously resolves with reduction in ventilatory pressures. Rarely, patients may develop tension pneumomediastinum requiring mediastinotomy and drain placement to evacuate air from the chest [5].

This computed tomography image (Fig. 1) demonstrates pneumomediastinum in a 66-year-old male who was intubated at SUNY Downstate for COVID-19. On hospital day 7, his physical exam demonstrated subcutaneous emphysema in the arms, chest, and neck. CT of the chest revealed extensive subcutaneous emphysema, bilateral dissection of pectoralis muscle, and air defining the aorta within the mediastinum. Patchy ground glass and consolidative airspace opacities, consistent with viral pneumonia, are also apparent. The patient's ventilator mode was changed from volume control auto flow to pressure support ventilation to reduce barotrauma. The patient was extubated on hospital day 16 and discharged to home on hospital day 28.

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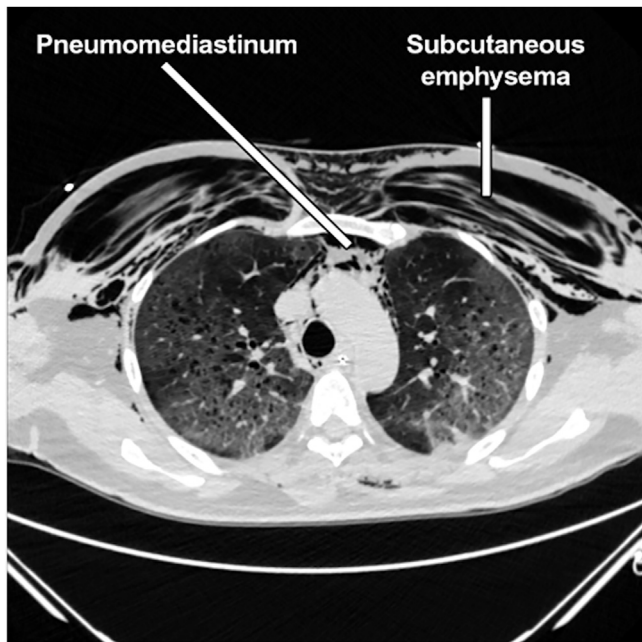


Fig. 1. Computed tomography image demonstrating pneumomediastinum and severe subcutaneous emphysema in patient with COVID-19.

Author statement

Diana M Fidrocki: conceptualization, Writing – original draft preparation, investigation; Nathaniel R. Greenbaum: Writing –

Reviewing and editing, image preparation, Geraldine C Diaz: Supervision, Writing – Reviewing and editing.

Declaration of Competing Interest

The authors report no declarations of interest.

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