Pneumomediastinum Associated With SARS-CoV-2 Infection: Risk Factors and Outcomes

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Introduction

With the ever-increasing number of COVID-19 cases being reported around the world, barotrauma is being documented as a worrisome complication in a number of patients, especially those in the intensive care unit or undergoing mechanical ventilation. Pneumomediastinum, specifically, is just one of these complications in SARS-COV2 infection that is increasingly being seen in our institution. This study's purpose is to compare characteristics of COVID-19 patients with pneumomediastinum to provide insight into risk factors and outcomes.

Materials/Methods

COVID-19 patients with imaging-diagnosed spontaneous or post-intubation pneumomediastinum between 3/16/2020 and 5/15/2020 were compiled. The control group consisted of COVID-19 patients with thoracic imaging, without pneumomediastinum. Patient charts were retrospectively reviewed for demographics, past medical history, imaging findings, and outcome variables. Chi-squared and two-sample Wilcoxon tests were performed for nominal and continuous data, respectively.

Results

Twenty-seven patients were positive for both COVID-19 and pneumomediastinum. 56% of these developed pneumomediastinum post-intubation. Longer mean lengths of stay (19.8 versus 7.8 days, $p<0.001$) were found in those with pneumomediastinum versus those without; no significant difference in survival was found between groups. Those with spontaneous pneumomediastinum were more likely to have pulmonary embolism and pneumothorax (36.4% versus 3.3%, $p<0.002$; 35.4% versus 0.8%, $p<0.001$, respectively). Post-intubation pneumomediastinum patients were more likely to have pneumothorax and bronchiectasis (60% versus 0%, $p<0.001$; 40% versus 2.9%, $p<0.038$, respectively). Multivariate logistical regression demonstrated increasing likelihood of pneumomediastinum with decreasing BMI and age (OR 0.64, $p<0.022$; OR 0.54, $p<0.012$; respectively).

Conclusions

Pneumomediastinum during admission for SARS-COV2 may result in increasing morbidity and longer admissions. Findings support studies showing increasing pneumomediastinum/pneumothorax rates for younger and leaner patients. COVID-19-related alveolar injury may make certain patients more susceptible to pneumomediastinum, specifically those with pulmonary embolism or chronic airway disease undergoing ventilation. COVID-related pneumomediastinum often presents with other features of barotrauma, rather than an isolated occurrence. Clinicians should be aware of developing pneumomediastinum in those with pulmonary embolism or bronchiectasis, for targeted care, given the dependence on ventilator use for COVID-19 management.

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