

SUBCUTANEOUS EMPHYSEMA AND PNEUMOMEDIASTINUM COMPLICATIONS OF POST COVID-19 IN PAEDIATRICS AGE GROUP

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INTRODUCTION

Coronavirus disease 2019 (COVID-19) is a multisystem infection that predominantly affects the respiratory system. Pneumomediastinum and subcutaneous emphysema in COVID-19 cases do not always appear to be associated with the classic barotrauma mechanism, which refers to high transpulmonary pressures. The relatively high incidence of pneumomediastinum and subcutaneous emphysema (up to 13%) observed during the COVID-19¹. This case report highlights a recognized post-COVID-19 complication in a paediatric patient.

CASE DESCRIPTION

We present the case of a 7-year-old girl with a history of Category 2A COVID-19 infection in March 2022. She presented again 3 months later to the Emergency Department in June 2022 with complaints of fever, rapid breathing, cough, and a runny nose. On examination, the child appeared tachypnoeic with a respiratory rate of 48 breaths per minute. Oxygen saturation (SpO₂) on room air was 93%, and she was placed on a face mask with 5 L/min oxygen. Auscultation revealed transmitted sounds bilaterally, and further physical examination detected crepitus over the neck region. A chest X-ray revealed pneumomediastinum along with subcutaneous emphysema of the upper chest. CXR reporting finding showed lucency seen along the mediastinum in keeping with pneumomediastinum. Gas shadow seen along the cervical and bilateral axillary subcutaneous tissue. This patient was monitored for few days subsequently discharged well to home.

References

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DISCUSSION

COVID-19 infection is associated with acute respiratory distress syndrome (ARDS), which results from a severe inflammatory response. In the case presented, crepitus in the neck region was noted—a sign of underlying subcutaneous emphysema. The pathophysiology of this condition involves a cascade of proinflammatory cytokines that trigger alveolar injury, pulmonary oedema, and reduced oxygenation. This hypoxic state leads to pulmonary vasoconstriction and increased vascular permeability, allowing an influx of inflammatory cells into the lung parenchyma. This process contributes to decreased surfactant production and subsequent atelectasis². The mismatch between ventilation and perfusion creates an increased physiological dead space, while the rise in plasminogen activator inhibitor type 1 (PAI-1), a protein that inhibits the fibrinolytic system, may reduce fibrin degradation². This leads to perfusion deficits and pulmonary dysfunction, ultimately contributing to complications such as subcutaneous emphysema. Importantly, in the context of COVID-19, pneumomediastinum and subcutaneous emphysema may occur independently. In relation to this case, the child had persistent and continuous cough which related to valsalva maneuvers (e.g. coughing, vomiting, labor, sneezing, use of inhaled medication), severe bronchopulmonary infection, foreign body ingestion, esophageal rupture and dental surgery, although there may be no identifiable cause³. Thus, this might be contributing in occurrence of spontaneous pneumomediastinum.



Figure 1

CONCLUSION

Subcutaneous emphysema and pneumomediastinum are rare but notable complications in post-COVID-19 paediatric patients. A deeper understanding of the underlying pathophysiology is necessary. Given the increasing incidence reported during the pandemic, these conditions deserve careful clinical attention and further research.

Keywords : COVID-19, subcutaneous emphysema, pneumomediastinum

