

A Case Study of Tension Pneumothorax: Secondary to Covid-19 Infection

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Abstract

Corona-virus infection that arose from China is now a global pandemic. It presents with a variety of pulmonary manifestations, most commonly in the form of ground glass pulmonary lesions and opacities. Rare manifestation such as pneumothorax has been reported by some authors. This study report was for a 32-year-old woman with Corona-virus disease presenting with tension pneumothorax, a rare and life-threatening complication of Corona-virus infection that has not been reported previously. In this case, after insertion of thoracostomy tube, the patient's symptoms improved. After about 1 year of Corona-virus pandemic, it still presents with some rare pulmonary and extra-pulmonary manifestations, so, familiarity with these manifestations is important for a correct diagnosis and treatment.

Keywords: pulmonary lesions, pneumothorax, thoracostomy

Introduction

The world health organization declares covid-19 as a global health emergency. It is a single-stranded RNA virus also name as SARS-CoV-2 that causes severe respiratory distress syndrome¹. A novel coronavirus 2019 first spark as an outbreak in china in December, 2019 caused severe epidemics around the world and followed by a pandemic. Though some corona patients reached a devastating epidemics outcome, others show mild to moderate respiratory infections, like the common cold². The pathophysiological features of severe covid-19 are dominated by an acute pneumonic process with extensive radiologic opacity and, on autopsy, diffuse alveolar damage, inflammatory infiltrates, and microvascular thrombosis³. Common presentation may be fever (83%), Cough (64.0%), Shortness of breath (47.0%), Sore throat (43.0%)⁴. But some rare presentation may also occur like Tension Pneumothorax. It is such a case for study and presentation.

Case study

This 32 years old female, housewife normotensive, nondiabetic patient hailing from nagarkanda, Faridpur, presented with sudden severe breathlessness associated with right sided chest pain for 3 days. Breathlessness is present in rest, more marked on lying on right side and also on lying flat. It is progressive, not associated with wheeze and does not relieve by taking rest or drugs. She also complains of right sided chest pain, which is sharp and stabbing in nature. The patient also complains of cough. There is no history of trauma or fever. There is no history suggestive of bronchial asthma. There is no family history of such illness. On presentation she was hypoxaemic, with an SpO₂ of 80% without oxygen, tachycardic and On auscultation, breath sounds were absent throughout the right hemithorax with associated reduced vocal fremitus and reduced right side chest movement. Local guidelines recommended that the patient should be initiated on continuous positive airway pressure while investigations were awaited; however given the examination findings an emergency chest radiograph was performed. The chest radiograph demonstrated a right-sided tension pneumothorax with mediastinal shift and radiological signs of tension (figure-1). Patient condition deterioration rapidly. Water seal drainage was done immediately. A repeat chest radiograph demonstrated lung re-expansion, tube in situ, but bilateral opacity was seen & patient was hypoxic & oxygen saturation was also low about 86% we advice HRCT of chest show ground glass opacity. Having with this condition it was advised RT PCR for covid -19 and found positive. The patient then referred to CMH Dhaka with chest tube drainage. There treatment was given according to national COVID-19 guideline such as Hydrocortisone, Anti viral (remdisivir), plasma therapy & maintain chest tube drain ,after recovery tube was removed & post tube removal x-ray show lung fully expand & patient saturation was also normal

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Radiological findings

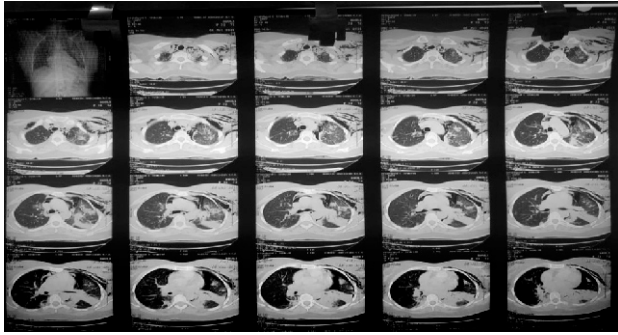


Figure 1: Chest radiograph demonstrated a right-sided tension pneumothorax with mediastinal shift and radiological signs of tension

Discussion

This patient was a nonsmoker with no prior history of cystic lung disease or emphysema. She did not exhibit any signs or symptoms suggestive of a connective tissue disorder. She was not on noninvasive positive pressure ventilation at the time of the event. Thus, she did not have the aforementioned predisposing factors for development of a tension pneumothorax. Although there have been several case reports highlighting the occurrence of spontaneous pneumothorax or pneumomediastinum in patients with COVID-19 pneumonia⁵ there have been only few prior case reports of patients with COVID-19 pneumonia who developed a tension pneumothorax. Yasukawa et al⁶ described a tension pneumothorax in a patient with no significant past medical history who was admitted with COVID-19 infection. The patient was later discharged on hospital day 12 and returned with worsened pleuritic chest pain with imaging showing a large new right pneumothorax with evidence of left mediastinal shift. She was treated with chest tube placement, and a follow-up chest X-ray revealed a large bulla. Flower et al⁷ also described a 36-year-old man with a history of tobacco smoking and childhood asthma who had presented with 3 weeks of symptoms and was found to have a left-sided tension pneumothorax on admission. Spiro et al⁸ described a 47-year-old man but no prior lung disease who presented to their hospital, 25 days after the onset of symptoms and 4 days after his initial discharge with a right-sided tension pneumothorax. Deliwala et al⁹ described a patient with COVID-19 pneumonia, intubated for respiratory failure, who developed a fatal tension pneumothorax as a result of ventilator-induced lung injury in the setting of severe ARDS. The underlying mechanisms leading to the development of pneumomediastinum, a spontaneous pneumothorax, or tension pneumothorax are not entirely certain. These cases were dissimilar to our case that present

with tension pneumothorax (CXR). It was managed by urgent insertion of chest drain tube (background of x ray chest & clinical finding) but patient still Hypoxic Then advice HRCT which show ground glass opacity Then advised RT PCR for COVID -19 and was Positive. Then it was referred to CMH Dhaka. There treatment protocol was according to national COVID-19 guideline such as, Hydrocortisone, Anti viral (remdisivir), plasma therapy & maintain chest tube drain, and after recovery the tube was removed & post tube removal x-ray show lung fully expand & patient saturation was also normal

Conclusion

In conclusion, COVID-19 infection may present with a variety of pulmonary manifestations, most commonly in the form of GGO pulmonary lesions and opacities, which might have to be superinfected by bacterial infections. But other manifestations such as pneumothorax, pneumomediastinum, and rare and more life-threatening than all, tension pneumothorax, may also be seen in the disease. After about 1 year of COVID-19 pandemic, it still presents with rare pulmonary and ex-trapulmonary manifestations. Such rare manifestations may present as first symptoms or like in this case, may present with delay as secondary symptoms and familiarity with these manifestations is important for a correct diagnosis and treatment.

Conflict of interest: No

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