

## Sequels of Events in Covid 19 Patients

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### How to cite this article:

Pallavi Verma, Kishalay Datta, Anita Rawat, et al. Sequels of Events in Covid 19 Patients. Indian J Emerg Med 2020;6(4):279-282.

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### Abstract

The Coronavirus Pandemic began in China in December 2019. In a short time, this pandemic spread globally. This virus has been called the 2019 new coronavirus (2019-nCoV) by the World Health Organization. The characteristic features/symptoms of Covid-19 are fever, cough, shortness of breath, abdominal pain, myalgia, sore throat, loss of smell and taste, diarrhoea, chest pain other possible symptoms.

The characteristic features on Chest xray/CT chest are subpleural localized ground glass opacities and numerous irregular areas of consolidation in both lungs and especially in the lower lobes. Pneumothorax and Subcutaneous emphysema remains a relatively rare sequelae indicating a rate of 1%.

In this case report, we aim to present a case of Covid-19 positive patient with cough, high fever and breathlessness who later developed pneumothorax in the left hemithorax and subcutaneous emphysema. It should be kept in mind that in patients with Covid-19 pneumonia, pneumothorax secondary to lungparenchymal damage may occur. Mortality rates can be reduced in patients with early diagnosis and treatment.

**Keywords:** Covid 19 Patients; Sequels of Events in 2019.

### Introduction

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome virus coronavirus 2 (SARS-CoV-2). The disease was first seen in December 2019 in Wuhan, and has been spreading globally, resulting in a global pandemic. At hospital admission, most common symptoms of COVID-19 are fever, cough and shortness of breath. Abdominal pain, myalgia, diarrhea, sore throat, chest pain, fatigue, loss of smell and taste are other possible symptoms.<sup>1</sup>

The diagnosis is made by real time-reverse transcription polymerase chain reaction (rRT-PCR) from a nasopharyngeal swab. Radiological imaging plays an important role in the diagnosis and treatment of pneumonia. Chest radiographs show

low-density pneumonia foci (viral pneumonia), which mostly involve bilateral mid-lower zones in this disease. Chest X-ray sensitivity is low (30-60%).<sup>2</sup> In Computed tomography (CT), the most common radiological finding is unilateral or bilateral ground glass appearance. In addition, consolidation, prominent vascular markings, airway changes, air bubble sign-small bubbles of gas within the periphery of lungs, pleural changes, halo sign-circular area of ground-glass attenuation that is seen around pulmonary nodules, inverted halo sign (atoll sign)-central ground-glass opacity surrounded by denser consolidation of crescentic or complete ring, lymphadenopathy, pericardial effusion and fibrosis are among the findings.<sup>3</sup>

In cases with polymerase chain reaction (PCR) negative symptoms, Imaging with computerized

tomography (CT) is strongly recommended especially in COVID-19 suspected cases on either initial or on further evaluation.<sup>4</sup>

In this study, A Case was evaluated having history of fever, cough and shortness of breath and was diagnosed Covid-19 pneumonia which later on developed into left pneumothorax and emphysema.

### Case report

A 60-year-old male patient with a history of fever with cough for last 15 days and history of dyspnea for last 2-days was admitted in the Hospital in July 2020. His COVID RT-PCR was positive. On admission, the patient's arterial oxygen saturation (SpO<sub>2</sub>) was 70% on room air, 92% on 10 L O<sub>2</sub>. There is no history of smoking and any underlying medical conditions. His complete blood count showed leukocytes 20,000/cumm (normal range 4000–11,000cumm) and blood platelet  $110 \times 10^9/l$  (normal range  $125-350 \times 10^9/l$ ), Serum procalcitonin in was 0.30 ng/ml (normal range 0–0.05 ng/ml), Hypersensitive C-reactive protein was 110.7 mg/l (normal range 0–3 mg/l), urea: 30.3 mg/dL, Creatinine: 0.94 mg/dL, LDH: 150 U/L, procalcitonin: 0.043 ng/ml. Blood gas analysis on room air showed Type II Respiratory failure, D-Dimer 6040 (normal range <250ng/ml), Interleukin-6 14.43 (normal range 0–16.4pg/ml).

The patient was given oxygen therapy, Remdesivir, Tocilizumab as well as high dose of antibiotics (initially ceftriaxone + sulbactam + disodium edetate) followed by Levofloxacin and piperacillin-sulbactam sodium. He also received steroid therapy (methylprednisolone 40 mg, daily intravenous injection).

Chest Xray showed non homogenous and ground glass opacities in B/L mid and lower zones (more on left then right). (Fig. 1)



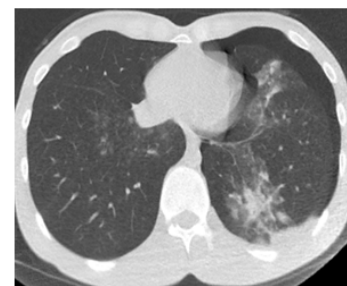
**Fig 1:** Xray on Admission-showing B/L ground glass opacities (Lt>Rt).

NCCT Chest revealed multiple ground glass opacities bilaterally with consolidation. (Fig. 2)



**Fig. 2:** CT CHEST -showing B/L Consolidation.

Bedside ECHO was done from subcostal view which showed normal valve echoes, normal chamber dimensions, no LV RWMA with LVEF 60%. 1st dose of plasma was given on 4th day of admission, Subsequently, Patient's Covid 19 report found to be Negative on 10<sup>th</sup> day and Lymphocyte counts showed decreasing trend. On 12<sup>th</sup> day, his dyspnea suddenly worsened. HRCT Chest image revealed findings suggestive of Fibrotic stage of ARDS, with small pneumothorax on the left, combined with pneumo mediastinum and subcutaneous emphysema. (Fig. 3)



**Fig. 3:** HRCT CHEST- Lt sided Pneumothorax.

In view of above findings, High-flow O<sub>2</sub> support, steroid therapy and antibiotic therapy modified, Despite of all this treatment, patient's general condition deteriorates and repeat HRCT showed increased Pneumomediastinum with subcutaneous emphysema. Chest tube insertion to the left pleural space was done to drain the excess air in ICU. (Fig 4)



**Fig. 4:** Chest Xray- Chest Tube In Situ.

Appropriate treatment started accordingly. Multiple X-rays of the lungs were obtained to evaluate the lung involvement, pneumothorax and subcutaneous emphysema. General condition of the patient improved day by day. Pneumothorax and Pneumonic infiltrations were totally resolved. Chest tube was removed and the patient was discharged from hospital. (Fig. 5)



Fig. 5: Chest Xray after Chest tube removal.

## Discussion

An outbreak of pneumonia with an undefined origin emerged from Wuhan, China and was declared by world health organization as Pandemic. COVID-19 is a serious health problem concerning every country nowadays. COVID-19 primarily spreads by small droplets during close contact. Even the majority of cases result in mild symptoms, some cases develop viral pneumonia and multiorgan failure. It is reported that the virus access the cells via angiotensin-converting enzyme-2 which are plenty in type II alveolar cells of the lungs. Thus, the lungs are the most affected organs by COVID-19.<sup>5</sup>

In patients with COVID-19, chest CT is recommended in suspected patients for both initial diagnosis and follow up. Moreover, CT findings has found to be diagnostic in cases if initial rRT-PCR test was false-negative. Most common lung involvement pattern is bilateral Ground Glass Opacities mostly seen in lower lobes with peripheral distribution, as seen in our patient along with Atypical imaging features. Li et al. reported CT Halo sign as an atypical imaging finding in COVID-19 pneumonia which was classically seen in hemorrhagic nodules. In the report of Chen et al. that consists of characteristics of 99 patients with COVID-19, 1 case of pneumothorax was firstly mentioned as an atypical imaging feature of disease. Our case report further supports the probability of spontaneous pneumothorax (sequele) in COVID-19

patients with lung involvement as there was no other obvious reason like new infection, trauma or other cause of SOB and that too after Covid Rt Pcr report was negative. In this way, this case report highlights a rare clinical scenario of the COVID-19 and emphasizes the importance of initial CT imaging.<sup>6</sup>

Pneumothorax is a clinical entity which defined as presence of air between visceral and parietal pleura, which can impair oxygenation and ventilation. Pneumothorax can be classified into three categories as Spontaneous (primary or secondary), Traumatic and Iatrogenic, with spontaneous pneumothorax being the most common type.<sup>7</sup> Secondary spontaneous pneumothorax occurs due to preexisting lung disease, like pneumonia, COPD. Severe strain during persistent cough in COVID-19 pneumonia can be the causative factor for pneumothorax.<sup>8</sup>

## Conclusion

The present case highlights a rare clinical scenario of spontaneous pneumothorax with subcutaneous emphysema accompanying COVID-19 pneumonia with CT illustrations. Clinicians should be aware of that pneumothorax can be observed within the radiologic manifestations of COVID-19 pneumonia despite of being Covid RTPCR comes out to be negative.<sup>9</sup>

*Conflict of Interest:* None declared.

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