

## Case Report

### Rare Possible Complications : Pneumothorax and Subcutaneous Emphysema In COVID-19 Patients

Atul Verma<sup>1</sup>, Prithish Mahanta<sup>1</sup>, Smriti Khari<sup>2</sup>, Jaideep Singh<sup>3</sup>, Himanshu Chaudhary<sup>4</sup>, T R Sirohi<sup>5</sup>

Coronavirus Disease 2019 (COVID-19) is a Respiratory Tract Infection (RTI) caused by a newly emergent Coronavirus, that was first recognized in Wuhan, China, in December 2019. Genetic sequencing of the virus suggests that it is a Beta Coronavirus closely linked to the SARS virus<sup>1</sup>. By the end of 2019, several cases of Pneumonia with unknown aetiology were reported in Wuhan, China<sup>2-5</sup>. Most cases progressed to Acute Respiratory Distress Syndrome (ARDS)<sup>2</sup>.

As the second wave surge of COVID-19 has occurred, most of the patients already suffered from dyspnoea but rare complications also seen more frequently in respiratory presentation. Cases of Pneumothorax and Subcutaneous emphysema is not seen frequently in COVID-19 patients so far. Here we are presenting two unusual complications in COVID-19 patients of our COVID facility. The possibility of spontaneous Pneumothorax/Tension Pneumothorax should be kept in differential diagnosis in COVID-19 patient presented with severe breathlessness and on higher settings of Non-invasive ventilation and on higher respiratory assistance can cause Subcutaneous emphysema.

[J Indian Med Assoc 2022; 120(5): 53-5]

**Key words :** Case report, Spontaneous pneumothorax, Subcutaneous emphysema, COVID 19 corona virus SARS CoV2 complication, CT

Since the second wave of COVID-19 in India from early April 21 to May 21 due to Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2), surge of cases occurred and has hit India badly.

Cases discussed in this report were admitted in primary care facility (covidsection) Lokpriya Hospital, Meerut (Reg No : RMEE1900995) in Western Uttar Pradesh which is primarily a sugarcane belt of India where most patients belong to lower socioeconomic status and not adopting COVID appropriate behaviour.

Reports of spontaneous pneumothorax, tension Pneumothorax as a result of COVID-19, in the absence of underlying lung disease before COVID Pneumonia or barotrauma due to mechanical ventilation are rare. Therefore, we describe a case of secondary Pneumothorax in a COVID-19 patient in our COVID facility.

#### CASE REPORTS

##### Case 1 :

A 71-year-old male (UHID No 12493) was brought to our Emergency Department with complaint of severe shortness of breath, chest pain, fever and generalized weakness.

COVID-19 Rapid Antigen Test from nasal swab came positive at the time of admission. High-resolution Computed Tomography (HRCT) chest done one day prior

Department of General Medicine, Netaji Subhash Chandra Bose Subharti Medical College, Meerut, Uttar Pradesh 250005

<sup>1</sup>MD, 1st year Junior Resident

<sup>2</sup>MD, 3rd year Junior Resident

<sup>3</sup>MD, 2nd year Junior Resident

<sup>4</sup>MS, 2nd year Junior Resident

<sup>5</sup>MD, Professor

Received on : 06/07/2021

Accepted on : 09/02/2022

#### Editor's Comment :

- Rare possible complications Pneumothorax and subcutaneous emphysema in COVID-19 patients.
- COVID Pneumonia is common I. COVID-19 presentation but pleural complications should be considered if patients deteriorates.

to admission S/O

CT severity index 18/25.

SpO<sub>2</sub> at the time of admission 60% on room air hence supplemental O<sub>2</sub> support @ 20L/min started with Bains circuit, resulting in peripheral SpO<sub>2</sub> saturation reached 97%.

On examination PR 108/min BP 104/68mmhg RR 40/min Temp 99.4-degree Fahrenheit. On examination of respiratory system bilateral decreased air entry with right sided crepts present (Fig 1).



Fig 1 — Urgent chest x-ray done. s/o left pneumothorax

**Investigation —**

Hb	13.6	PT TEST	13.8
TLC	14.9	PT INR	1.17
NEUTROPHIL	97	PT CONTROL	12
LYMPHOCYTE	2	RBS	195
PLT	1.1	HbA1C	7.3
ESR	35	PCT	0.43
UREA	32	LDH	1157
S. CREAT	0.47	Ddimer	>10000
S.NA	147	ABG	
S. K	5.5	pH	7.376
S. Ca	7.8	pCO2	45.7
S.BIL	0.83	pO2	53.8
AST	40		
ALT	22		
ALK	179		
Pro T	7.58		
Alb	4.31		
A/G RATIO	1.32		

Immediately ICD insertion done successfully between 4<sup>th</sup> and 5<sup>th</sup> intercostal space along the upper border of 5<sup>th</sup> rib in mid axillary line, in ICU setting. Saturation start improving reached 94%. finally, patient shifted to upgraded respiratory facility for further management.

**Case 2 :**

A 32-year-male (UHID No. 11764) patient brought to our Emergency Department with complain of fever since last 7 days. Patient also developed shortness of breath which was progressively increasing and more with physical activity.

Patient's RT PCR for COVID-19 came positive.

On examination patient was tachypnoeic with respiratory rate 40/min pulse rate was 120/min and BP 110/70 mmHg. Patient is febrile having axillary temperature 101.4 degree Fahrenheit. Patient saturation came 80% on room air, so supplemental Oxygen support given via non-rebreather mask. On examination of respiratory system Bilateral decreased Air entry with basal crepts.

**Blood investigations —**

Hb	13	ABG	
TLC	10.4	pH	7.44
NEUTROPHIL	92	pCO2	46.9
LYMPHOCYTE	6	pO2	86.4
PLT	1.5		
ESR	52		
UREA	36		
S.CREAT	1.4		
S.NA	149		
S.K	4.5		
S.Ca	6.7		
S.BIL	0.43		
AST	81		
ALT	77		
ProT	5.1		
Alb	3		
A/G RATIO	1.43		



Fig 2 — CT severity index 18/25.

Chest X-ray after Non-invasive ventilation shows Bilateral Lung Infiltrates and diffuse subcutaneous emphysema in the subcutaneous tissues of chest. Both domes and costophrenic angle are partially obscured. (Fig 2).

In view of not maintaining saturation patient taken on BiPAP after which saturation improving but patient develops Subcutaneous emphysema. After which BiPAP removed and taken on double Oxygen support @30L/min via nasal prongs and Bains support and patient maintain saturation of 94%. Subcutaneous emphysema resolves with this Conservative management within 24-48 hours.

Finally, patient expired 5 days later on after diagnosis due to respiratory arrest.

**CONCLUSION**

These cases show that in COVID-19 Pneumonia patient, possibility of spontaneous Pneumothorax/ tension Pneumothorax due to variable etiology. High pressure non-invasive ventilation is a risk factor of subcutaneous emphysema in COVID Pneumonia patients. So, possibility should keep in diagnosis and need prompt investigation and management.

**REFERENCES**

- 1 Team NCPERE. Vital surveillances: the epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19) – China. *China CDC Weekly* 2020; **2(8)**: 113-22.
- 2 Lu H, Stratton CW, Tang Y-W— Outbreak of pneumonia of unknown etiology in Wuhan, China: the mystery and the miracle. *J Med Virol* 2020; **92**: 401-2.
- 3 Huang C, Wang Y, Li X — Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020; **395**: 497-506.
- 4 Hui DS, I Azhar E, Madani TA — The continuing 2019-nCoV epidemic threat of novel coronaviruses to global health - The latest 2019 novel coronavirus outbreak in Wuhan, China. *Int J Infect Dis* 2020; **91**: 264-6.

- 5 WHO pneumonia of unknown cause – China. Available: <https://www.who.int/csr/don/05-january-2020-pneumonia-of-unknown-cause-china/en/>
- 6 Alhakeem A, Khan MM, Al Soub H, Yousaf Z — COVID-19-Associated bilateral spontaneous pneumothorax-A literature review. *Am J Med Hyg* 2020; **103(3)**: 1162-5, <https://doi.org/10.4269/ajtmh.20-0680>. PMID: 32666917; PMCID: PMC7470558.
- 7 Abushahin A, Degliuomini J, Aronow WS, Newman T — A case of spontaneous pneumothorax 21 Days after diagnosis of coronavirus disease 2019 (COVID-19) pneumonia, e925787. *Am J Case Rep* 2020; **15(8)**: 21, <https://doi.org/10.12659/AJCR.925787>. PMID: 32798215; PMCID: PMC7447295.
- 8 Chen X, Zhang G, Tang Y, Peng Z, Pan H — The coronavirus diseases 2019 (COVID-19) pneumonia with spontaneous pneumothorax: a case report, *BMC Infect Dis* 2020; **20(1)**: 662, <https://doi.org/10.1186/s12879-020-05384-x>. PMID: 32907540; PMCID: PMC7479294.
- 9 Gupta D, Hansell A, Nichols T — Epidemiology of pneumothorax in England. *Thorax* 2000; **55**: 666-71. 10.1136/thorax.55.8.666 [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- 10 Sahn SA, Heffner JE — Spontaneous pneumothorax. *N Engl J Med* 2000; **342**: 868-74. 10.1056/NEJM200003233421207 [PubMed] [CrossRef] [Google Scholar]
- 11 Zhao W, Zhong Z, Xie X, Yu Q, Liu J — Relation between chest CT findings and clinical conditions of coronavirus disease (COVID-19) pneumonia: a multicenter study. *AJR Am J Roentgenol* 2020; **214(5)**: 1072-7. [PubMed] [Google Scholar]
- 12 Li X, Zeng W, Li X — CT imaging changes of corona virus disease 2019(COVID-19): a multi-center study in Southwest China. *J Transl Med* 2020; **18(1)**: 154. [PMC free article] [PubMed] [Google Scholar]
- 13 Salehi S, Abedi A, Balakrishnan S, Gholamrezanezhad A — Coronavirus Disease 2019 (COVID-19): A Systematic Review of Imaging Findings in 919 Patients. *Am J Roentgenol* 2020; **14(3)**: 1-7. [published Online Ahead of Print, 2020 Mar 14] pp. 1–7. [PubMed] [Google Scholar]