



# Imaging changes of severe COVID-19 pneumonia in advanced stage

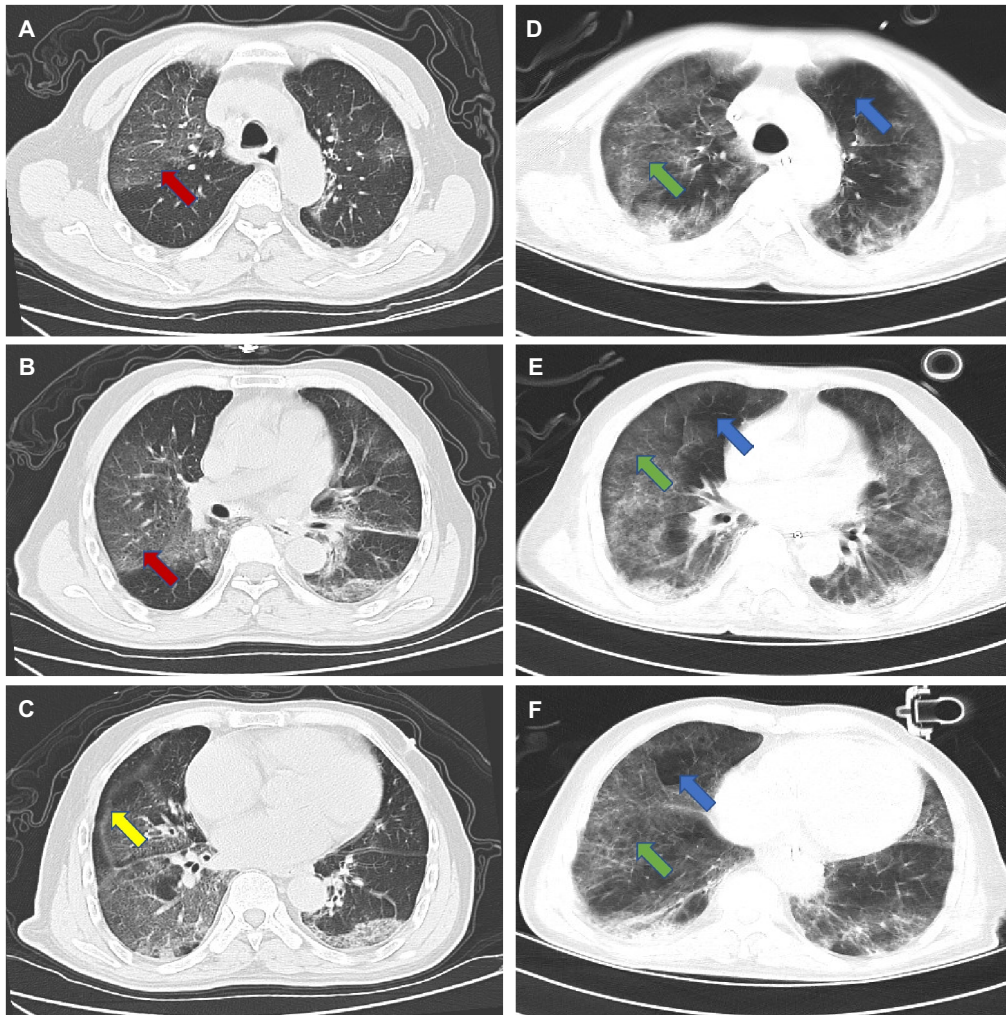
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We recently reported in Intensive Care Medicine the imaging changes of acute stage from a case of 75-year-old male patient with severe COVID-19 pneumonia combined acute respiratory distress syndrome (ARDS), septic shock, and multiple organ dysfunction syndrome (MODS) who had a history of 10-year hypertension and 1-year diabetes. He presently received advanced life support treatment including respiratory support (invasive mechanical ventilation) and circulatory support (vasoconstrictor assistance), as well as intermittent renal replacement therapy (IRRT) in intensive care unit (ICU) of our hospital—a tertiary teaching hospital of medical university. Because his MODS still existed on the day

20 after symptom onset, we had to re-examine the chest computed tomographic (CT). The results showed that early changes of reticular pulmonary fibrosis appeared in Panels D, E, and F (marked by green arrows), compensatory emphysema occurred in Panels D and E (marked by blue arrows), and pulmonary cavity formation appeared in Panel F (marked by blue arrows), compared with acute stage of the day 5 after symptom onset, *inflammatory lesions* and *ground glass shadow* of Panels A and B (marked by red arrows), as well as *septal line* of Panel C (marked by yellow arrows). Presently, this patient is still under the condition of advanced life support therapy (Fig. 1).

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Inflammatory lesions were marked by Red Arrows in Panel A and B, Septal line was marked by Yellow Arrow in Panel C; Early changes of reticular pulmonary fibrosis were marked by Green Arrows in Panel D, E, and F; Compensatory emphysema were marked by Blue Arrows in Panel D and E, and pulmonary cavity formation was marked by Blue Arrow in Panel F.

Panel A, B, and C denote computed tomography images on day 5 after symptom onset

Panel D, E, and F denote computed tomography images on day 20 after symptom onset

**Fig. 1** Chest computed tomographic image changes of a 75-year-old patient infected with 2019 Coronavirus Disease (COVID-19) in advanced stage

#### Acknowledgements

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#### Availability of data and materials

We stated that all the data and materials were true and available in the study.

#### Compliance with ethical standards

##### Conflicts of interest

All authors have read and approved the final version of the manuscript and agreed to submit it for consideration for publication in the journal. There are no ethical/legal conflicts involved in the article.

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**Ethics approval and consent to participate**

Written consent from the patient was waived, because of entirely anonymized images from which the individual cannot be identified.

**Consent to publish**

The author confirms that he has read the Journal's position on issues involved in ethical publication and affirms that this report is consistent with those guidelines.

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