

Coronavirus-HKU1 Pneumonia and Differential Diagnosis with COVID 19

Elisa Pianura, MD, INMI L. Spallanzani, Rome
Federica Di Stefano, MD, INMI L. Spallanzani, Rome
Massimo Cristofaro, MD, INMI L. Spallanzani, Rome
Ada Petrone, MD, INMI L. Spallanzani, Rome
Nicoletta Fusco, MD, INMI L. Spallanzani, Rome
Fabrizio Albarello, MD, INMI L. Spallanzani, Rome
Daniele Lapa, MD, INMI L. Spallanzani, Rome
Stefania Cicalini, MD, INMI L. Spallanzani, Rome
Paolo Campioni, prof, INMI L. Spallanzani, Rome
Vincenzo Schininà, MD, INMI L. Spallanzani, Rome

IRCCS INMI L. Spallanzani Via Portuense 292 cap 00149 Rome

Corresponding author: federica.distefano@inmi.it (Federica Di Stefano, Via Civitella D'Agliano 22, 00191 Rome, Italy)

Any funding information:

nothing

Manuscript Type:

Images in Cardiothoracic Imaging

Unblinded acknowledgments:

COVID 19 INMI Study Group

74-year-old female, residing in Rome, was admitted on March 4, 2020 with fever and dry cough for 5 days. She had an epidemiologic link with her sister, who tested positive for SARS-CoV-2. Laboratorial studies revealed elevated C-reactive protein and normal white cell count with neutrophilia. Chest CT obtained at admission showed multiple ground-glass opacities in both upper and left lower lobes, with small pleural effusions (Figure 1a). The patient was negative for SARS-CoV-2 on three polymerase chain reaction (PCR) nasopharyngeal swab tests. Serological tests for SARS-CoV-2 were also negative. A subsequent analysis for other respiratory viruses was positive for HKU1-CoV, and follow-up CT performed after 2 weeks of therapy showed almost complete radiological resolution (Figure 1b).

Although chest CT has been used for diagnosing coronavirus disease 2019 (COVID-19) (Figure 2), it relies on relatively nonspecific signs, such as multifocal and peripheral ground-glass opacities, consolidations, and crazy paving, which can be also found in other viral pneumonias¹⁻³. We illustrate a case of HKU1-CoV pneumonia, a novel group 2 coronavirus discovered in January 2004, which has been also associated with community-acquired pneumonia⁴. Given the pandemic setting of COVID-19, the current case underscores the confirmatory role of PCR and the need for considering alternative diagnoses, especially when the full clinical, laboratorial, and radiological picture does not fit into the most common presentation. Noticeably, neutrophilia and pleural effusions have been infrequently seen at the initial presentation of COVID-19⁵.

References:

- 1) Zhu N, Zhang D et al. A novel coronavirus from patients with pneumonia in China, 2019. *New Engl J Med* 2020 January 24. <https://doi.org/10.1056/NEJMoa2001017>
- 2) Xiong Y, Sun D, Liu Y, Fan Y, Zhao L, Li X, Zhu W. Clinical and High-Resolution CT Features of the COVID-19 Infection: Comparison of the Initial and Follow-up Changes. *Invest Radiol.* 2020 Mar 3. doi: 10.1097/RLI.0000000000000674
- 3) Albarello F, Pianura E, Di Stefano F, Cristofaro M, Petrone A, Marchioni L, Palazzolo C, Schininà V, Nicastri E, Petrosillo N, Campioni P, Eskild P, Zumla A, Ippolito G; COVID 19 INMI Study Group. 2019-novel Coronavirus severe adult respiratory distress syndrome in two cases in Italy: An uncommon radiological presentation. *Int J Infect Dis.* 2020 Feb 26;93:192-197. doi: 10.1016/j.ijid.2020.02.043.
- 4) Woo PC, Lau SK, Tsoi HW, Huang Y, Poon RW, Chu CM, Lee RA, Luk WK, Wong GK, Wong BH, Cheng VC, Tang BS, Wu AK, Yung RW, Chen H, Guan Y, Chan KH, Yuen KY; Clinical and Molecular Epidemiological Features of Coronavirus HKU1–Associated Community-Acquired Pneumonia; *J Infect Dis.* 2005 Dec 1; 192(11): 1898–1907. Published online 2005 Dec 1. doi: 10.1086/497151
- 5) Ng M, Lee E, Yang J et al. Imaging profile of the COVID-19 infection: radiologic findings and literature review. *Radiology Cardiothoracic Imaging* 2020 February 13 (Epub ahead of print), doi: 10.1148/ryct.2020200034.

FIGURES

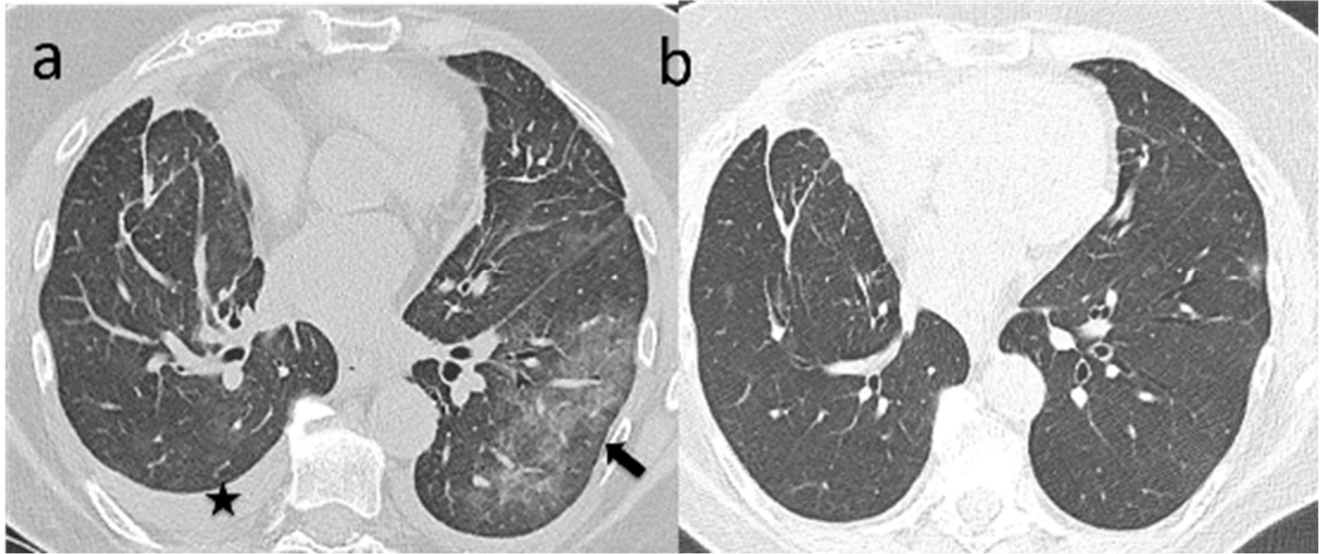


Fig. 1 Patient with HKU1 coronavirus pneumonia. CT scan performed at admission (a) showed a large area of peripheral ground-glass opacity (arrow) in the lower left lobe and small pleural effusions (asterisks). The CT scan performed after 14 days (b) showed almost complete resolution of the imaging findings.

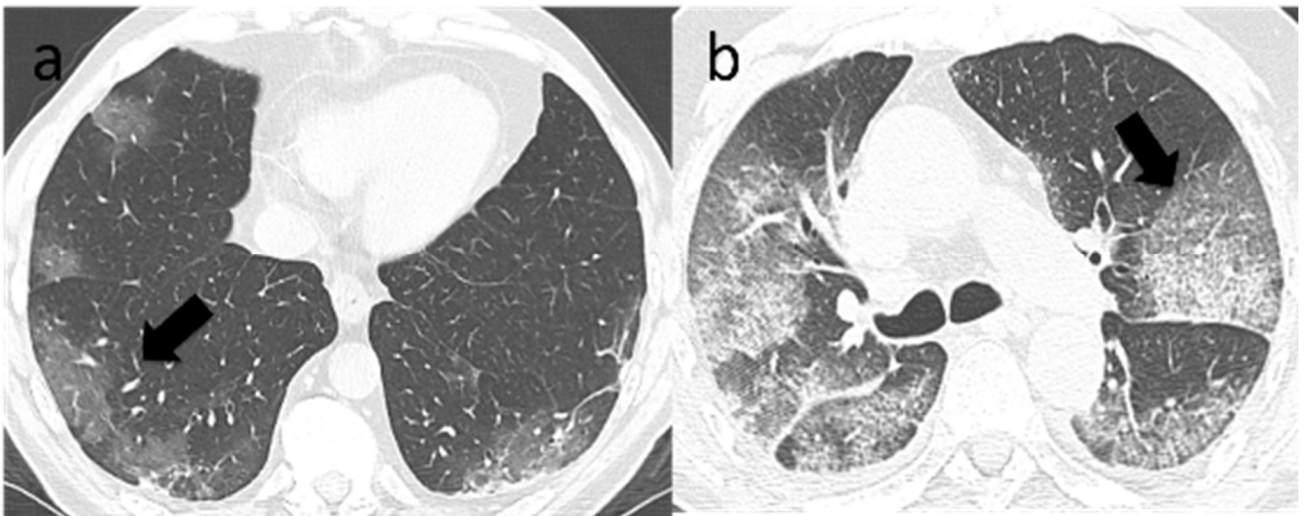


Fig. 2 Patient with COVID-19 pneumonia. Typical CT aspect of COVID-19 pneumonia: initial phase of disease with areas of ground-glass opacity peripherally (a, arrow); severe phase of disease with diffuse crazy paving pattern (b, arrow). Pleural effusions are absent.