

Heart and lung involvement detected by native T1 and T2 mapping magnetic resonance imaging in a patient with coronavirus disease-19

Giovanni Camastra¹, Federica Ciolina², Luca Arcari¹, Massimiliano Danti², and Luca Cacciotti¹

¹Cardiology Unit, Madre Giuseppina Vannini Hospital, via di Acqua Bullicante 4, 00177 Rome, Italy; and ²Radiology Unit, Madre Giuseppina Vannini Hospital, 00177 Rome, Italy

*Corresponding author. Tel: +39 3497757351. E-mail: gcamastra@virgilio.it

A 57-year-old woman was presented to our coronavirus disease-2019 (COVID-19) dedicated coronary care unit following chest pain, fever, and concomitant increased high-sensitivity cardiac troponin. Nasopharyngeal swab tested positive for severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), while chest computed tomography confirmed interstitial pneumonia. We performed cardiac magnetic resonance imaging using a 1.5 T scanner including mapping sequences. Native T1 (mid-septum, 1238 ms) and T2 (mid-septum, 65 ms) showed diffusely increased signal intensity which suggested wide myocardial wall oedema (Panels A and B, respectively). Systolic function was normal, and no late enhancement (LGE) was found (Panel C). A diagnosis of SARS-CoV-2-related myocarditis was hypothesized. Beyond cardiac findings, COVID-19 pneumonia-related processes were evident as hyperintense areas in TRUE-FISP sequences [Supplementary data online, Video S1; Panel D, pleural effusion (black asterisk) and lung consolidation in the right inferior lower lobe (white asterisk)], while native T1 and T2 mapping assessment within affected lung areas revealed higher values as compared with remote unaffected regions (1658 vs. 1415 and 73 vs. 24 ms, respectively; Panels A and B, respectively). TRUE-FISP identified all the lesions detected by chest-CT imaging, whereas mapping did not; however, tissue characterization by the latter indicated increased water and cellular content within the airway wall and/or lumen, hypothetically signifying ongoing inflammation. In conclusion, native T1 and T2 aided diagnosis of myocarditis in the absence LGE, further studies are needed to ascertain whether mapping assessment of lungs might provide useful clinical and pathophysiological information in COVID-19.

Supplementary data are available at *European Heart Journal - Cardiovascular Imaging* online.

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