IMAGE FOCUS

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Quantitative pixel-wise analysis of native T1 mapping for identification of cardiac involvement in severe acute respiratory syndrome coronavirus 2 infection

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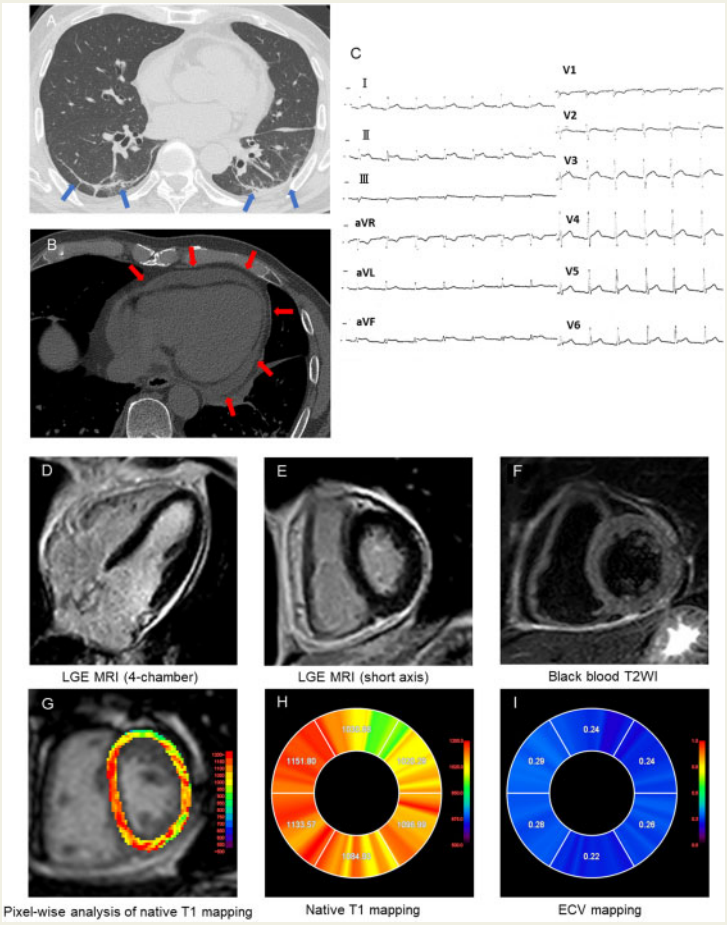
A 71-year-old man was admitted to our hospital due to exacerbation of dyspnoea and positive polymerase chain reaction for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Chest computed tomography revealed peripheral, bilateral linear shadows in the lower lung, suggesting inflammation, and scarring triggered by SARS-CoV-2 pneumonia (*Panel A*). In addition, a moderate amount of pericardial effusion was detected (*Panel B*). Thereafter, treatment with favipiravir and methylprednisolone was initiated. Four days later, the patient complained of chest pain and ST-segment elevation on leads I, II, aVF, and V5–6 and ST-segment depression in aVR was identified (*Panel C*). Blood testing revealed elevated levels of high sense troponin T at 0.067 ng/mL (reference range 0–0.014 mg/mL). Cardiac magnetic resonance was performed to evaluate the cardiac involvement in SARS-CoV-2 infection. Although no hyperenhancement of LV myocardium on late gadolinium-enhanced (LGE) magnetic resonance imaging was identified, pericardial thickening and a small amount of pericardial effusion were detected (*Panels D* and *E*). Myocardial oedema was not clear on a black blood T2 weighted image (*Panel F*). However, native T1 time was elevated in the anteroseptal wall on quantitative pixel-wise analysis using dedicated software (Ziostation, Ziosoft Inc. Tokyo, Japan) (*Panels G* and *H*). The abnormality of extracellular volume fraction was not obvious (*Panel I*). Elevated native T1 time presumably corresponded to myocardial oedema due to myocarditis by SARS-CoV-2. Quantitative pixel-wise analysis of native T1 mapping may be useful to identify myocardial injury by SARS-CoV-2 infection.



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