IMAGE FOCUS

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Myopericarditis following SARS-CoV-2 mRNA vaccine: the role of cardiac biomarkers and multimodality imaging

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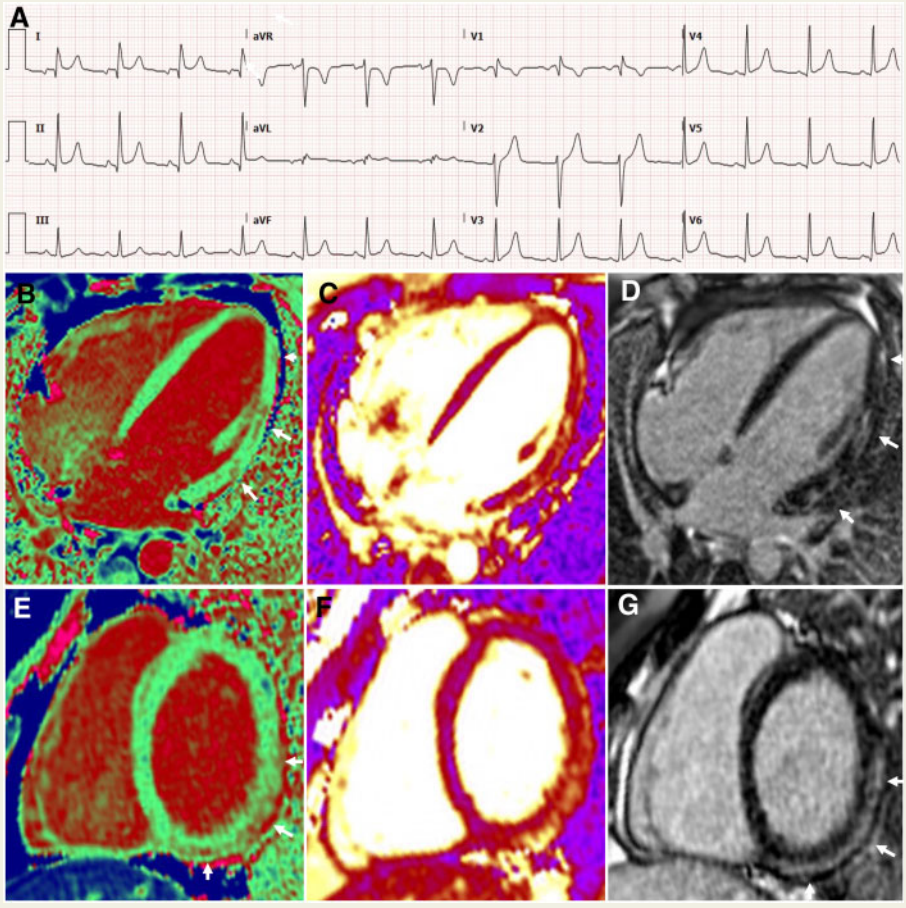
A 20-year-old male presented with severe chest discomfort associated with palpitations 1-day after his second Pfizer-BioNTech COVID-19 vaccine dose. Other than obesity (body mass index of 32kg/m2) he had no other medical conditions and no preceding infective symptoms.



Electrocardiogram showed global concave ST-segment elevation suggestive of pericarditis (*Panel A*). There was a serial rise in troponin (peak 1035ng/L, *normal* < 14ng/L). Viral screen, including for SARS-CoV-2 was negative. There were no arrhythmias on telemetry monitoring. Transthoracic echocardiography revealed low normal left ventricular (LV) systolic function (ejection fraction 50%) but no pericardial effusion. Cardiovascular magnetic resonance (CMR) four-chamber view (supplemental video 1) demonstrated elevated lateral LV myocardial T1 (*Panel B*), T2 (*Panel C*) and corresponding subepicardial late gadolinium enhancement (LGE, Panel D). Short axis imaging confirmed inferior wall involvement (Panels E, F and G). Once symptoms had improved and troponin levels were decreasing, he was discharge on a 3-month course of colchicine. A repeat CMR in 3-months and further Holter monitoring was arranged.

Cases of myocarditis after SARS-CoV-2 mRNA vaccine in the young population are rare, mild and are typically seen after the second vaccine dose. Presence of long-term consequences are yet to be determined. Differential diagnosis for such presentations such as viral myopericarditis and takotsubo cardiomyopathy should be considered. Serial troponins, echocardiography and multiparametric CMR were pivotal for diagnosis and guiding appropriate management. Overall, the evidence for benefits of reduced hospitalizations and deaths due to COVID-19 following the vaccine are far out-weighed by the potential risks.

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