CARDIOVASCULAR FLASHLIGHT

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Fulminant COVID-19-related myocarditis in an infant

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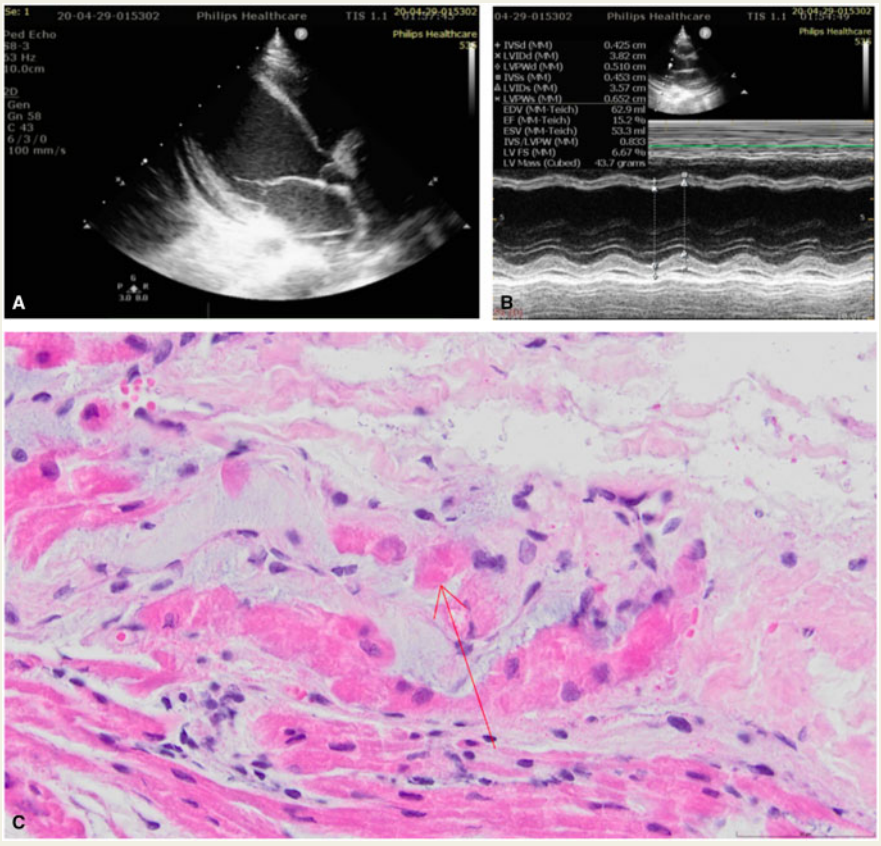

A 2-year-old, otherwise healthy boy with a history of COVID-19-positive patient contact was hospitalized with nausea, vomiting, and poor oral intake. Physical examination was normal. Chest X-ray (CXR) demonstrated bilateral interstitial infiltration. Investigations including acute phase reactants were in the normal range. Multiplex PCR for viruses was negative and no bacterial infection was found. Real-time reverse transcription–polymerase chain reaction (RT–PCR) was negative for SARS-COV-2. He swiftly developed respiratory distress with filiform pulse, unmeasurable blood pressure, lethargy, and hepatomegaly on the second day, and was transferred to the paediatric intensive care unit, and promptly intubated. Acute phase reactants remained low with a 30 times elevated troponin T. CXR revealed cardiomegaly and pleural effusion. Echocardiography was compatible with severe cardiac failure (*Panels A* and *B*). The cardiogenic shock state did not respond to inotropes, necessitating extracorporeal membrane oxygenation (ECMO). During the preparation of ECMO, cardiac arrest developed and an extrapulonary CPR (E-CPR) procedure was applied with veno-veno–arterial access in the course of a 30 min CPR. Biopsy specimen of the myocardium taken during ECMO cannulation was compatible with dilated cardiomyopathy secondary to viral myocarditis when evaluated, with COVID-19 RT–PCR positivity in the cardiac tissue (*Panel C*).

The effect of COVID-19 on myocardial function is still not well established and there is a need for histological cardiac assessments. To our knowledge, this is the first case describing COVID-19-related fatal fulminant myocarditis demonstrated with pathological work-up in an infant. The presence of the viral genome in myocardial tissue together with local inflammation is noteworthy. Negative inflammatory indicators suggest the existence of direct damage by the virus.