CARDIOVASCULAR FLASHLIGHT

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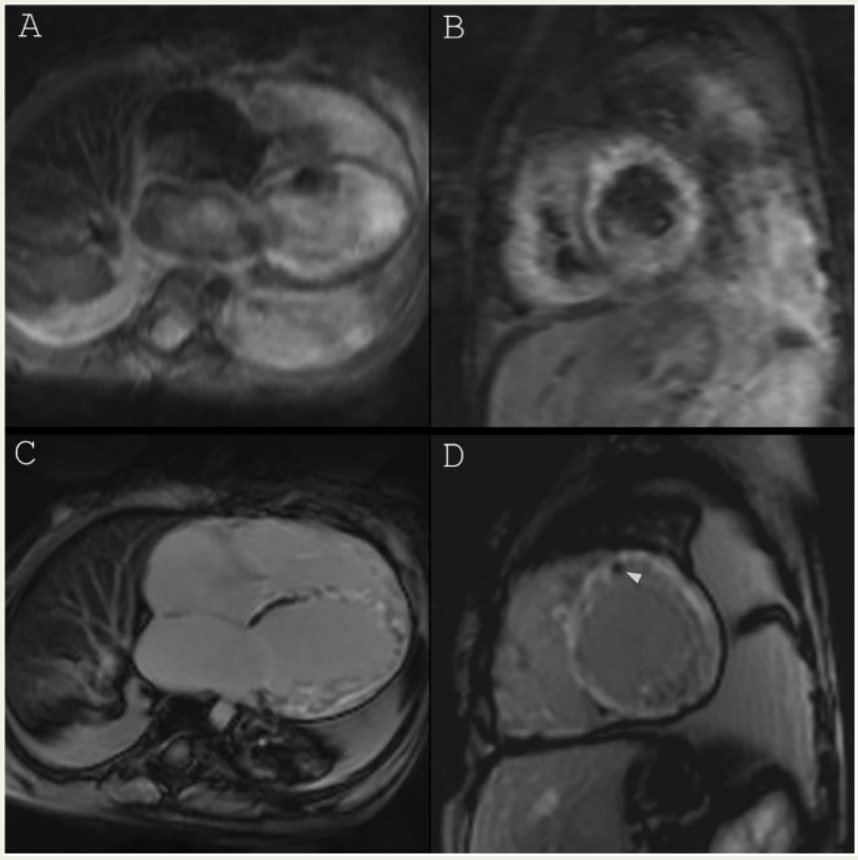
Delayed diffuse inflammatory myocardial damage in a child with a history of systemic inflammatory syndrome related to COVID-19

Mohammad Mahdavi, Golnaz Houshmand , Hamidreza Pouraliakbar, and Golnar Mortaz Hejri*

Rajaie Cardiovascular Medical and Research Center, Iran University of Medical Sciences, Valiasr St, Niayesh Blv, P.O. 1965833453, Tehran, Iran

* Corresponding author. Tel: +9823923753, Email: gmortaz.h@gmail.com

A 4-year-old girl presented to the emergency unit with respiratory distress and tachycardia. She had a history of admission due to COVID-19 related systemic inflammatory syndrome. The real -time polymerase chain reaction (RT-PCR) for SARS-COV2 had been positive, and 2 weeks before, she was discharged with good condition and preserved left ventricular function. At the current admission, she was afebrile, the blood pressure 90 mmHg/pulse, heart rate 140 b.p.m., respiratory rate 40 breath/min, and the O_2 saturation was 92% in room air. The point of care echocardiography revealed severe left and right ventricular dysfunction with bilateral pleural effusion.



Blood tests showed leucocytosis white blood cells (WBC) 17.7 $\times$ 10^9/L polymorphonuclear (PMN) 70% lymphocyte 25%, elevated cardiac and inflammatory markers, troponin I 3.5 µg/L (<0.03 µg/L), proBNP 8827 pg/mL, ferritin 683 ng/dL, and c-reactive protein (CRP) 40 mg/L. The SARS-COV2 RT-PCR returned negative, but the IgG for SARS-COV2 was positive.

Chest CT showed lung congestions with bilateral moderate pleural effusion. The cardiac magnetic resonance on the sec ular ejection fraction (LVEF) = 10%, right ventricular ejection fraction (RVEF) = 16% (Supplementary material online, *Video S1*) T2 weighted images showed diffuse oedema (*Panels A* and *B*). Late gadolinium enhancement images showed diffused nearly transmural myocardial injury in the left and right ventricle with a spared basal septum and small left ventricular thrombosis (*Panels C* and *D*). The computed tomography (CT) angiography revealed normal coronary arteries.

The diagnosis of fulminant myocarditis was made and treatment initiated with steroid, intravenous immunoglobulin, and anticoagulation. She was transferred to the paediatric intensive care unit on Day 3 because of haemodynamic worsening and was put on mechanical ventilation and vasopressors. She was non-responsive to the medical treatment, and unfortunately, she died due to refractory cardiac failure after 3 weeks.

Supplementary material is available at *European Heart Journal* online.

Conflict of interest: The authors have submitted their declaration which can be found in the article Supplementary Material online.