A 59-year-old female was admitted with tachycardia and atypical chest pain. Physical examination was normal. The initial electrocardiogram (ECG) showed atrial fibrillation with a heart rate of 140/min. Laboratory results on admission were unremarkable except for a markedly elevated C-reactive protein of 180 mg/dL (normal value, <5 mg/dL). Troponin T levels on admission and follow-up were negative. A follow-up ECG after 4 h documented a spontaneous conversion in sinus rhythm and normal ST-segments. Echocardiography showed a normal left ventricular function (ejection fraction 60%) with no regional wall-motion abnormalities. A small circular pericardial effusion was noted. Additional laboratory tests revealed an acute parvovirus B19 infection by detecting parvovirus B19-specific IgM antibodies in the serum.

Cardiac magnetic resonance (CMR) imaging was scheduled to rule out acute myocarditis. A thickened pericardium (5.5 mm) and a small pericardial effusion were noted at cine-imaging (Panel A). At T2-weighted imaging (Panel B), a hyperintense signal from the thickened pericardium was noted suggesting pericardial oedema. No signs of myocardial oedema were present. Ten minutes after contrast administration of 0.2 mmol/kg gadolinium–DTPA inversion recovery, CMR revealed bright hyperenhancement of the complete pericardium (Panels C and D). No foci of delayed enhancement in the myocardium were noted.

Based on the findings at CMR, acute pericarditis was diagnosed. The patient was treated with non-steroidal anti-inflammatory medication for 4 weeks and remained asymptomatic thereafter.

This case shows that CMR is a valuable non-invasive tool in the differential diagnosis of acute chest pain even in the absence of typical ECG changes. Based on the findings of oedema and contrast enhancement of the pericardium suggesting an acute diffuse inflammatory process of the pericardium, the definite diagnosis of acute pericarditis could be established. Moreover, involvement of the myocardium in the inflammatory process could be excluded.

Panel A. Cardiac magnetic resonance image were obtained with the balanced steady-state free precession technique showing thickened pericardium (5.5 mm, arrows) and a small pericardial effusion.

Panel B. Short-time inversion recovery T2-weighted image show also hyperintense signal from the pericardium (arrows).

Panels C and D. Contrast-enhanced phase-sensitive inversion recovery images [four-chamber view (C) and three-chamber view (D)] in the late phase after gadolinium injection reveal hyperenhancement from the pericardium (arrows).