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THE USEFULNESS OF EARLY CARDIOVASCULAR MAGNETIC RESONANCE IN PATIENTS PRESENTING WITH ACUTE CHEST PAIN, POSITIVE TROPONIN AND NON-OBSTRUCTIVE CORONARY ARTERIES

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Introduction Patients presenting with chest pain, raised troponin but non-obstructive coronary arteries pose a clinical challenge in diagnosis, prognosis and management. We hypothesised that early cardiovascular magnetic resonance (CMR) imaging can provide a diagnosis and comprehensive characterisation for acute myocardial injury of indeterminate aetiology.

Methods and results 120 patients presenting with chest pain, positive troponin (TnI>0.04 μg/l) and non-obstructive coronary arteries prospectively underwent early CMR (median 3 days, range 0–14 days) at 1.5 T, including cine imaging for function, T2-weighted imaging for oedema and late gadolinium enhancement (LGE) imaging for myocardial necrosis/scarring. The mean age=50±17 years (50% female); median TnI=3.99 ug/l (0.07–60 μg/l); mean left ventricular ejection fraction=64±12%. There was a high CMR diagnostic yield of 95%. Significant oedema was detected in 79% and LGE in 61%. The commonest diagnosis was myocarditis (37.5%), followed by Takotsubo cardiomyopathy (22.5%), myocardial infarction (17.5%), acute regional stunning (9.2%; wall motion abnormality with oedema but no LGE), dilated cardiomyopathy (4.2%), hypertrophic cardiomyopathy (3.3%), and missed pulmonary embolism (0.8%). Eleven of the 21 patients with MI (52%) had a patent foramen ovale (PFO) demonstrated on transthoracic echocardiography with agitated saline contrast and presumably suffered a paradoxical embolism to a coronary artery. The remaining 5.0% of patients had no clear diagnosis identified.

Conclusions CMR has a high diagnostic yield (95%) in patients presenting with troponin-positive chest pain but non-obstructive coronary arteries when performed early (median 3 days). This study highlights the importance and usefulness of early access to CMR in this group of patients. When no apparent cause is identified, early conventional CMR was able to exclude myocardial infarction, wall motion abnormality, significant oedema or scarring.