

Meeting abstract

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2020 The detection of myocardial scar by ceMRI in patients with TnI positive chest pain and minimal angiographic coronary artery disease

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Introduction

International guidelines recommend early coronary angiography (CA) and revascularization in all patients diagnosed with acute myocardial infarction (AMI). Normal CA does not exclude AMI but makes the final diagnosis less accurate. Contrast enhanced magnetic resonance imaging (ceMRI) is able to both identify myocardial damage and describe its pattern.

Purpose

To investigate the presence and pattern of delayed hyperenhancement (DE) in troponin positive (TnI+) patients with normal CA.

Methods

Eighty consecutive patients with first presentation of TnI+ chest pain underwent ceMRI at a mean (SD) of 64 (23) hours from chest pain on a Siemens Sonata 1.5 T system using a phased array chest coil during breath-holds. Cinematographic images were acquired using a steady state free precession sequence. CeMRI was performed > 15 minutes after peripheral injection of 0.2 mmol/kg gadolinium-DTPA using a segmented gradient-echo inversion-recovery sequence for DE. Scans were assessed by 2 experienced observers and DE was planimetered manually. CA was performed at the discretion of the Cardiologist in charge of patients care, minimal disease is defined as < 25% maximal stenosis. Patients were divided by pattern

of DE into AMI (subendocardial) and cardiomyopathy (subendocardial sparing).

Results

Eight (10%) chest pain, TnI+ patients, mean (SD) 46 (12) years, had a normal CA and seven had evidence of DE. Four (3 male) had an ischaemic distribution of DE (2 inferior, 1 lateral and 1 anterior): median (IQR) TnI, 21.9 (11.3–34.2) ng/ml; DE, 8.1 (2.5–21) g; and minimal disease at CA (n = 3). Three (2 male) had subendocardial sparing pattern of DE and were diagnosed with acute myocarditis: median (IQR) TnI, 29.3 (14.8–50) ng/ml; DE, 36.5 (21.3–55.6) g; all had normal coronaries at CA. One patient was negative for DE and had a TnI of 4.4 ng/ml; a final diagnosis of Takotsubo cardiomyopathy was made by characteristic cinematographic images. This patient had minimal disease at CA. Only one patient out of eight (12.5%) had MACE (stroke) recorded at 3 years and he was from the AMI group.

Conclusion

Ten percent of troponin positive patients in this population had normal coronary arteries. CeMRI has added to the diagnostic accuracy by confirming ischaemic damage in 50% and diagnosing cardiomyopathy in the other 50%.