Journal of Cardiovascular Magnetic Resonance

Poster presentation

Open Access

Time course of myocardial oedema in acute coronary syndrome assessed at 3 T using a bright blood T2-prepared SSFP sequence

Erica Dall'Armellina*[1], Alistair C Lindsay[1,2], Matthew D Robson[1], Theodoros D Karamitsos[1], Jane M Francis[1], Keith M Channon[3], Adrian P Banning[4], Rajesh Kharbanda[4], Robin P Choudhury[3] and Stefan P Neubauer[1]

Address: [1]OCMR, Department of Cardiovascular Medicine, University of Oxford, Oxford, UK, [2]University of Oxford, Oxford, UK, [3]Department of Cardiovascular Medicine, University of Oxford, Oxford, UK and [4]Department of Cardiology, John Radcliffe Hospital, Oxford, UK

* Corresponding author

from 13th Annual SCMR Scientific Sessions
Phoenix, AZ, USA. 21-24 January 2010

Published: 21 January 2010

Journal of Cardiovascular Magnetic Resonance 2010, **12**(Suppl 1):P149 doi:10.1186/1532-429X-12-S1-P149

This abstract is available from: http://jcmr-online.com/content/12/S1/P149

Introduction

Cardiac magnetic resonance (CMR) is used in the evaluation of acute coronary syndrome (ACS) to assess both area at risk (AaR) and area of necrosis. However, the time course and evolution of myocardial oedema in patients with ACS is not known. We sought to assess the change in myocardial oedema following percutaneous coronary intervention (PCI) in patients with ST-elevation myocardial infarction (STEMI) and non-ST elevation ACS (NSTE-ACS).

Methods

Patients admitted with NSTE-ACS who underwent PCI within 24 hours, or with STEMI were imaged using CMR (Siemens Trio 3 T) at 24-48 hours (E1) and 5-7 days (E2) post PCI. STEMI patients were also imaged at 14-17 days (E3). The imaging protocol included short axis images covering the entire left ventricle (LV) acquired using T2-prepared SSFP sequence and late gadolinium enhancement (LGE). Percentage of myocardial oedema (oedema area/LV slice area: AaR) and myocardial scar were assessed offline.

Results

We identified two groups of male patients (6 STEMI and 6 NSTE-ACS) matched for age (54 ± 8 yrs vs 59 ± 13 yrs) and AaR at E1 (24 ± 15% and 23 ± 14%).

In NSTEMI patients, AaR decreased to 15.6% (p = 0.10) between E1 and E2. In contrast, in STEMI AaR increased from 24 ± 15% at E1 to 31 ± 15% 5-7 days post PCI (E2). By 14-17 days (E3) there was a significant decrease in oedema (20 ± 13%) in this group.

Myocardial scar assessed by LGE was significantly smaller in NSTE-ACS compared to STEMI (7 ± 9% vs 21 ± 12%;p = 0.05), Figure 1.

Conclusion

For equivalent initial area at risk at E1, patients with STEMI have larger scar and more persistent oedema. Myocardial oedema post PCI decreases in NSTE-ACS within 7 days, but increases in STEMI. These dynamic changes highlight the importance of CMR in ACS patients and suggest the need to define the optimal time point to assess area at risk.

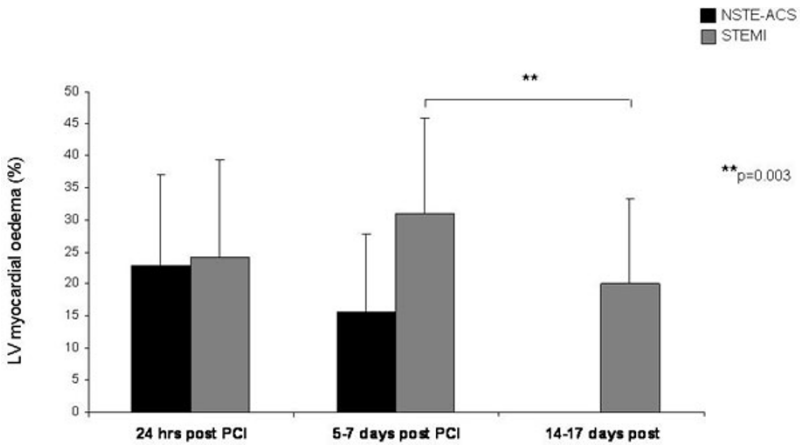

Figure 1