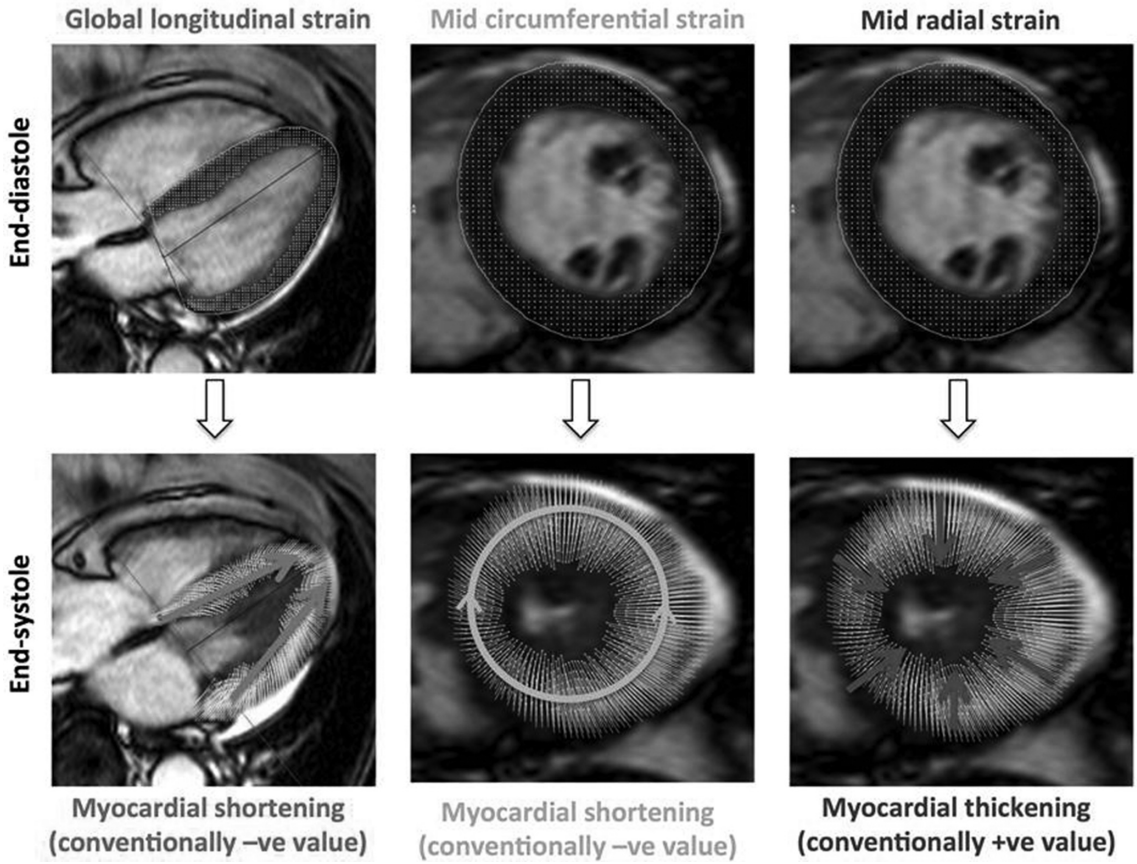

Abstract 22 Figure 1 Definition of longitudinal, circumferential and radial myocardial strain, calculated by SSFP long-axis and short-axis cine images

Furthermore, we also showed that the interventricular septum is the segment with lowest deformation values. These findings are important, as a comprehensive understanding of normal intraventricular regional variation is needed before this new tool can be implemented in routine clinical practice.

23 ASSESSMENT OF THE ISCHAEMIC BURDEN IN PATIENTS WITH ISCHAEMIC HEART DISEASE THROUGH COMBINED HIGH-RESOLUTION ASSESSMENT OF QUANTITATIVE PERFUSION AND LATE ENHANCEMENT

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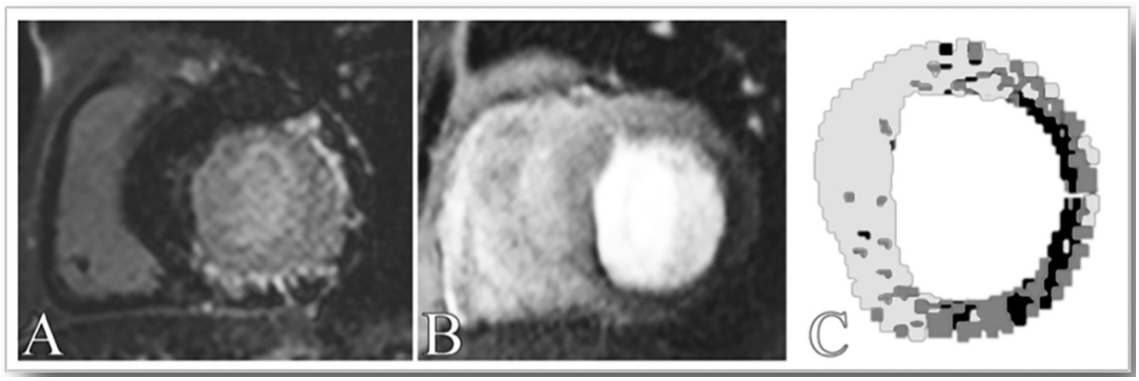
Background Patients with ischaemic heart disease (IHD) often show a combination of inducible ischaemia and previous myocardial infarction, therefore is particularly relevant to reach an accurate assessment of myocardial viability and ischaemic burden, as this may results in more appropriate therapy and better outcome. Areas of scar frequently result in false-positive perfusion findings, we therefore hypothesised that combined cardiac magnetic resonance (CMR) high-resolution quantitative perfusion and late gadolinium enhancement (LGE) protocol will result in a more accurate evaluation of ischaemic burden, avoiding areas of scar.

Methods 15 patients with IHD and ejection fraction (EF) <45% were included. Patients underwent adenosine stress perfusion at 3T (Philips Achieva) using high-resolution kt turbo-field-echo sequence and dual bolus approach. Perfusion and LGE images were analysed both qualitatively and quantitatively (using validated high-resolution deconvolution analysis and conventional semi-quantitative analysis with 5SD). For combined analysis, perfusion and LGE images were matched in terms of position and cardiac phase using a deformable template segmentation method. High-resolution MPR and LGE maps were then generated and ischaemic burden calculated ±LGE (Figure 1).

Results The average EF was 33 ± 9.5%. All patients showed scar and perfusion defects at visual assessment. The average scarred area was 18 ± 6.8%. Average MPR was 2.3 ± 2.4, 3.2 ± 0.6 in viable area (LGE-) and 1.05 ± 0.69 in non-viable areas (LGE+) ($p = 0.001$ Vs LGE-). 27%(4/15) of patients had a perfusion defect extending only in LGE area. The overall ischaemic burden (MPR threshold 1.5) was 23.2 ± 13.5%, but after excluding LGE dropped to 12.4 ± 7.6% ($p = 0.001$).

Conclusions Our study demonstrates the potential of combined high-resolution assessment of stress perfusion and LGE to provide more accurate measurements of ischaemic burden excluding areas of scar, These areas, which frequently result in false positive perfusion defects and possible overestimation of ischaemic burden, had an MPR≤1, as expected in areas of scar.



Abstract 23 Figure 1 Perfusion defect extending beyond the area of scar. A: LGE image shows a subendocardial scar involving the lateral and inferior wall; B: perfusion defect in the lateral and inferior wall; C: high-resolution perfusion map show area of scar (black), areas of ischaemia (dark grey) and normal areas of myocardium (light grey)

24 ASSESSMENT OF THE EFFECTS OF TECHNIQUE ON PULMONARY ARTERIAL PULSE WAVE VELOCITY MEASUREMENT

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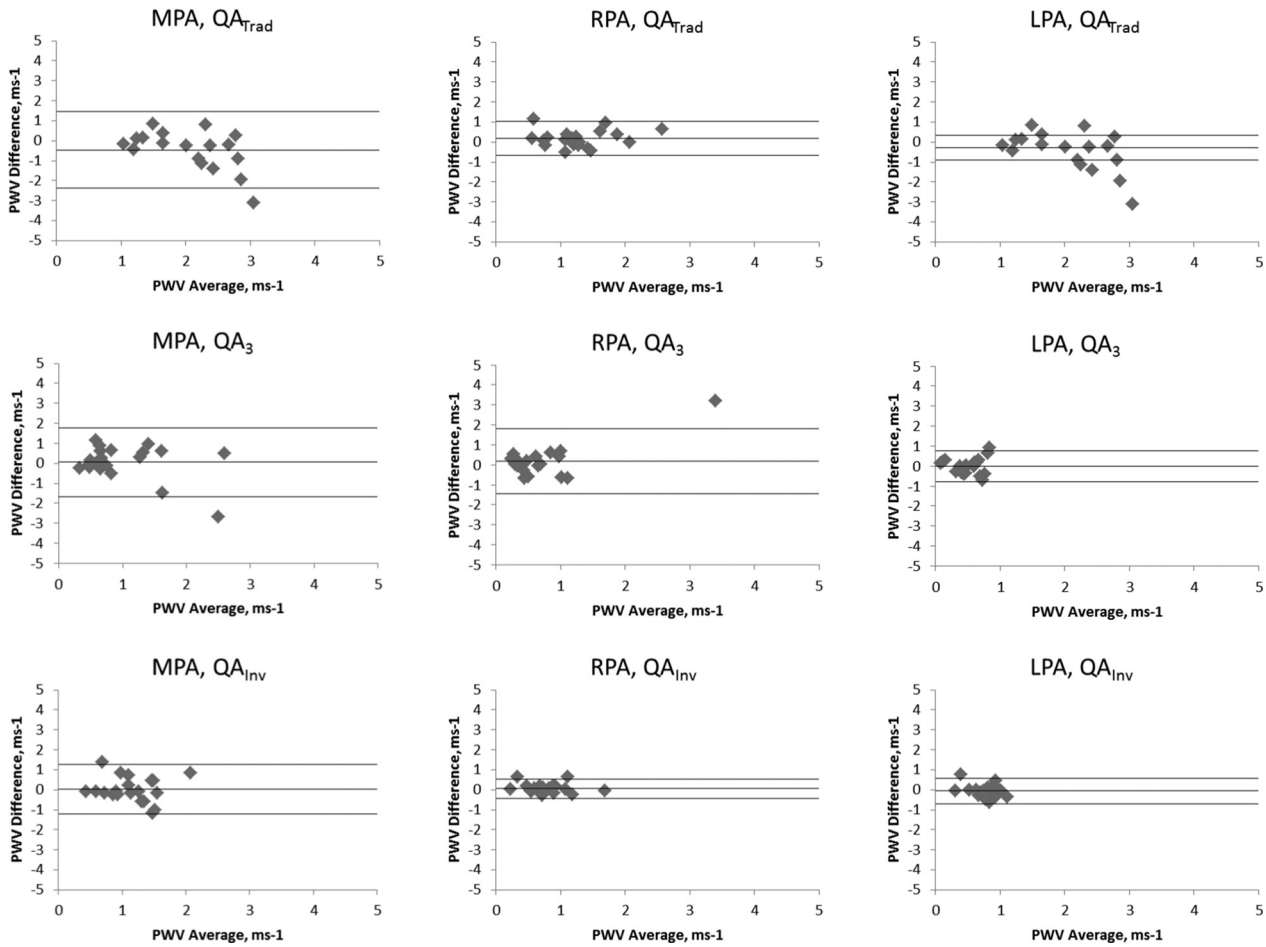
Aim The flow-area (QA) technique allows measurement of pulse wave velocity (PWV) from a single phase contrast slice. However in the pulmonary circulation reflected waves arrive during systole and may cause erroneous measurements using this technique. The aim of the study was to compare three post-processing calculations, one of which avoids the reflected wave, and the other which corrects for it, on the measurement of pulmonary PWV and its reproducibility.

Materials and methods 10 young healthy volunteers (YHV) (30% male, mean age 31.5 ± 7.6) and 20 older healthy volunteers (OHV) (45% male, mean age 60.2 ± 4.0) underwent MRI using phase contrast sequences through the main pulmonary artery (MPA), right pulmonary artery (RPA) and left pulmonary



Abstract 24 Figure 1 Bland-Altman plots comparing interscan PWV repeatability using the 3 techniques in the 3 pulmonary arterial locations