Conclusion

Estimates of stress MBF and MFR by perfusion-CMR in this study were greater in diastole than systole in normal and CAD patients. Although the diagnostic accuracy of both phases was similar, the MFR cut-off values were different. These observations are relevant to any form of dynamic myocardial perfusion assessment and are of particular importance to promising developments in 3D perfusion-CMR and CT perfusion imaging where the acquisition phase may be specifically chosen. Different estimates of MFB and different MFR cut-off values between phases mean a universal standard needs to be agreed for 3D acquisitions.

Results

In the 3VD group, high-resolution identified more abnormal segments per patient (7.5±3.7 vs 5.2±3.9; p=0.01), more abnormal territories per patient (2.0±0.9 vs 1.46±1.0; p=0.02) and a higher overall perfusion score (17.7±6.6 vs 13.9±10.2; p=0.03). The number of segments with subendocardial ischaemia was greater for high-resolution (134 vs 70 segments; 47% vs 24%; p<0.001) (Abstract 086 figure 2). The sensitivity, specificity and area under the curve (AUC) for identifying any perfusion defect were similar for both methods (high-resolution: 92%, 74% and 0.94 respectively vs standard-resolution: 79%, 84% and 0.87; p>0.05).

Abstract 086 Figure 1 Case example—standard-resolution shows perfusion defects (white arrows) in the basal inferior (A), mid inferior, mid inferoseptal (B), apical anterior and apical inferior segments (C), High-resolution demonstrates additional ischaemia in the basal lateral (D), mid anterior and mid anterolateral segments (E) with a circumferential defect in the apical slice (F), perfusion defects are also better delineated at high-resolution and the transmural extent of ischaemia more clearly seen.

Abstract 086 Figure 2 Distribution of transmural ischaemia index. High-resolution perfusion CMR detected significantly more subendocardial ischaemia and fewer normal segments than standard-resolution in angiographically underperfused segments.

Conclusion

In patients with 3VD, high-resolution perfusion-CMR detected more ischaemic burden than standard-resolution by identifying more segments with subendocardial ischaemia. High-resolution perfusion-CMR therefore has incremental value in correctly stratifying this high-risk patient group.

Abstract 087 Incremental value of high-resolution cardiovascular magnetic resonance myocardial perfusion imaging in suspected coronary artery disease

Introduction

Although accelerated high-spatial-resolution cardiovascular magnetic resonance (CMR) perfusion imaging has recently been shown to be clinically feasible, there has not yet been a direct comparison with standard-resolution methods. We hypothesised that higher spatial resolution detects more subendocardial ischaemia and leads to greater diagnostic accuracy for the detection of angiographically defined CAD. This study compared the diagnostic accuracy of high-resolution and standard-resolution CMR perfusion imaging in patients with suspected coronary artery disease (CAD).

Methods

A total of 111 patients with suspected CAD were prospectively recruited. All patients underwent two separate perfusion CMR studies on a 1.5 Tesla CMR scanner (Intera CV, Philips Healthcare, Best, the Netherlands) one with standard-resolution (2.5×2.5 mm in-plane resolution) and one with high-resolution (1.6×1.6 mm in-plane resolution) acquisition. High-