Meeting abstract

128 Head-to-head Comparison of whole-heart coronary MR and 40/64 slice multidetector-CT angiography for detection of coronary artery stenosis

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This abstract is available from: http://jcmr-online.com/content/10/S1/A29

Introduction

Whole-heart magnetic resonance coronary angiography (WH-MRCA) has been recently proposed for non-invasive coronary imaging. Early studies have suggested that WH-MRCA might have similarly high diagnostic accuracy for detection of coronary disease as multidetector CT (MDCT). Yet, no direct comparison between both techniques has been performed.

Purpose

The aim of the present study was therefore to perform a head-to-head comparison of both techniques for detection of significant coronary stenoses using invasive cardiac catheterization as reference standard.

Methods

Seventy-seven consecutive patients (56 M, 61 ± 14 years) prospectively underwent free-breathing 3-dimensional WH-MRCA and 40/64-slice MDCT before cardiac catheterization. WH-MRCA and MDCT images were visually graded by 2 blinded observers and the diagnostic accuracy of both methods for detecting >50% luminal diameter stenoses (DS) in segments and vessels >1.5 mm size was compared using quantitative angiography (QCA) as reference method.

Results

MDCT was successfully completed in all 77 patients in < 5 minutes. By contrast, WH-MRCA failed in 9 patients (12%) because of poor navigator performance and lasted 20 ± 4 minutes (p < .01 vs MDCT). According to QCA, out of 992 segments > 1.5 mm diameter, 49 presented >50% DS. If all segments including non interpretable segments were considered, WH-MRCA had lower sensibility (35/49 or 71% vs. 45/49 or 92%, p < 0.001), lower specificity (644/943 or 68% vs. 863/943 or 92%, p < 0.001) and accuracy (679/992 or 68% vs. 908/992 or 92%, p < 0.001) for detection of coronary stenosis than MDCT. However if only interpretable segments were considered, the sensitivity (35/37 or 95% vs. 45/46 or 98%, p = 0.58), specificity (644/689 or 93% vs. 863/917 or 94%, p = 0.67) and diagnostic accuracy (679/726 or 94%, vs. 908/963 or 94%, p = 0.58) of WH-MRCA and MDCT for detection of >50% DS was similar. This was also the case on per-vessel basis.

Conclusion

In the present study CT had higher success rate than WH-MRCA. Therefore on an intention to diagnose basis CT was superior to WH-MRCA. However, the diagnostic accuracy of WH-MRCA on per-segment and per-vessel basis was not statistically different from MDCT if only interpretable segments were considered.