

Oral presentation

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Recanalization of coronary chronic total occlusion guided by cardiovascular magnetic resonance imaging and its relation with health outcome measures

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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):O38 doi:10.1186/1532-429X-12-S1-O38

This abstract is available from: <http://jcmr-online.com/content/12/S1/O38>

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Introduction

The benefit of recanalizing a coronary chronic total occlusion (CTO) is controversial. Seattle Angina Questionnaire (SAQ) is one of the most widely used questionnaire to assess health outcome measures in patients with coronary artery disease.

Purpose

We sought to investigate whether CMR with LV function, perfusion and viability imaging can improve the selection of patients that can benefit from revascularization and whether this is associated with an improved quality of life.

Methods

Fifty-two consecutive patients with CTO were recruited and underwent CMR perfusion before recanalization. Stress CMR was performed after infusing adenosine and 0.1 mmol/Kg of gadolinium, followed by LGE and cine imaging. The presence and extent of ischemia was quantified by myocardial perfusion reserve index (MPRI) in the CTO and remote territory. Infarct size, left ventricular volumes and ejection fraction (LVEF) were also evaluated.

SAQ was carried out before and 4 ± 4 months after PCI. The SAQ consisted of 17 items measuring 5 different

aspects of quality of life. All items used six-point descriptive scales and score were calculated.

Results

Thirty-nine patients underwent successful recanalization and a repeat adenosine CMR perfusion (4 ± 4 months). Myocardial ischemia pre PCI was detected in the 30 patients (77%). No myocardial infarction was identified in 13 patients (42%), and a limited subendocardial infarction seen in 10 patients (33%).

A complete or almost complete resolution of ischemia was seen in all 30 patients ($p < 0.0001$) after PCI.

MPRI in the CTO territory significantly improved after successful recanalization, from 1.8 pre-PCI to 2.3 post-PCI ($p < 0.01$). MPRI pre-PCI in the CTO territory was significantly lower than in the remote area ($p < 0.001$).

MPRI in the remote area did not change significantly from pre- to post-PCI (2.2 to 2.5, $p = 0.13$).

LVEF improved from 60 ± 13% to 63 ± 13% ($p < 0.001$) due to a decrease of ESV from 70 ± 40 ml to 61 ± 41 ml ($p < 0.001$); EDV didn't change significantly.

A new but limited post-procedural myocardial infarction was detected in 7 patients (18%), likely to represent peri-procedural distal embolization or side branch impairment.

The total SAQ improved from 59 to 85 after recanalization ($p < 0.001$). The subgroups of the SAQ also improved: *physical limitation* from 63 to 81 ($p < 0.001$), *treatment satisfaction* from 73 to 94 ($p < 0.001$), *frequency and perception* from 43 to 80 ($p < 0.001$).

Conclusion

Recanalization of CTO guided by CMR reduced ischemic burden and improved left ventricular function. In a cohort of patients with limited angina, these imaging hallmarks of successful revascularization are related with improved health outcome measures.

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