

INPLASY PROTOCOL

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None.

The guidance value of coronary artery disease revascularization comparison between CMR Stress Perfusion Imaging and FFRCT with ICA as the reference standard: meta-analysis

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Review question / Objective: Patient: Patients with coronary artery disease Intervention: revascularization Comparison: CMR Stress Perfusion Imaging and FFRCT Outcome: CMR perfusion imaging exhibited higher value in guiding coronary revascularization compared to FFR for patients with suspected or known CAD.

Condition being studied: The morbidity and mortality of coronary heart disease (CAD) occupy first place among cardiovascular diseases. Among patients with CAD, early revascularization increases the survival rate and decreases the rate of recurrent myocardial infarction, so that improves symptoms and clinical outcomes. Revascularization was usually performed under the guidance of invasive coronary angiography (ICA), fractional flow reserve (FFR) is an invasive physiological index that can be easily measured during ICA, and it is a reliable method for determining lesion-specific ischemia and guiding CAD revascularization.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 01 September 2020 and was last updated on 01 September 2020 (registration number INPLASY202090001).

INTRODUCTION

Review question / Objective: Patient: Patients with coronary artery disease Intervention: revascularization Comparison: CMR Stress Perfusion

Imaging and FFRCT Outcome: CMR perfusion imaging exhibited higher value in guiding coronary revascularization compared to FFR for patients with suspected or known CAD.

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METHODS

Participant or population: Patients with coronary artery disease and they have no previous revascularization.

Intervention: Revascularization.

Comparator: CMR Stress Perfusion Imaging and FFRCT.

Study designs to be included: Diagnostic test.

Eligibility criteria: (1) patients who were suspected or diagnosed with CAD and have not undergone any surgical treatment; (2) revascularization was performed after ICA and FFRCT/ CMR Stress Perfusion Imaging. (3) ICA alone or ICA with FFR measurement was considered as the reference standards for the determination of anatomically significant and functionally significant CAD, anatomic coronary narrowing >50% was considered as determinant of significant CAD and an FFR ≤ 0.80 was considered as functionally significant CAD. (4) results were reported in absolute numbers of true-positive, false-positive, true-negative, and false-negative results, or sufficiently detailed data were provided to derive these numbers. (5) study was an original article and published in English.

Information sources: Pubmed, Embase, Cochrane Library, and Web of Science.

Main outcome(s): This meta-analysis found that CMR perfusion imaging exhibited higher value in guiding coronary revascularization compared to FFR for patients with suspected or known CAD.

Quality assessment / Risk of bias analysis: The methodological quality of the included studies was examined using the QUADAS (Quality Assessment of Diagnostic Accuracy Studies)-2 tool. The risk of bias and applicability was scored for the following four domains: patient selection, index tests, reference standard, flow, and timing. Quality assessment was performed using the Review Manager 5.3 software.

Strategy of data synthesis: The meta-analysis was performed using Review Manager 5.3 (Cochrane collaboration), STATA 16.0 and Meta-DiSc, Version 1.4 (Clinical Biostatistics Unit, Hospital Ramon y Cajal, Madrid, Spain).

Subgroup analysis: A subgroup analysis was performed to identify predefined sources of heterogeneity: patient characteristics (age and number), study design (prospective or retrospective), reference standards (ICA alone or ICA with FFR measurement), the time of examination (whether FFRCT/ CMR Stress Perfusion Imaging was used to early suggest revascularizations), magnetic field strength (3.0 or 1.5T, Number of slices CT scanner and Cut-off value).

Sensibility analysis: If significant heterogeneity exists, sensitivity analysis will be performed.

Country(ies) involved: China.

Keywords: revascularization; CMR Stress Perfusion Imaging; FFRCT; ICA.

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