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The prevalence of coronary microvascular dysfunction in heart failure with preserved ejection fraction: a systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - The review has not yet started.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202380007

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 01 August 2023 and was last updated on 01 August 2023.

INTRODUCTION

Review question / Objective We conducted this systematic review and meta-analysis to assess the prevalence of CMD in patients with HFpEF.

Condition being studied Comorbidity-driven CMD may play an important role in HFpEF and lead to predominantly diastolic dysfunction, cardiomyocyte dysfunction, and LV concentric remodeling³⁻⁷. Taqueti¹⁷ demonstrated that CMD was significantly associated with an increased risk of HFpEF events (>5-fold) patients with CAD. CMD is regarded as a novel mechanism in the development of HFpEF. To date, only SGLT2 inhibitors have been proven to be effective in patients with HFpEF^{8, 9}. It was proposed that HFpEF is an umbrella term involving many distinct endotypes but that the underlying pathophysiology, prognosis, and therapeutic targets differ among endotypes. CMD-HFpEF may represent one important distinct endotype^{10,11}.

METHODS

Participant or population Patients with CMD.

Intervention None.

Comparator None.

Study designs to be included Clinical study.

Eligibility criteria The inclusion criteria were as follows: (1) patients aged ≥ 18 years; (2) the prevalence of CMD in patients with HFpEF was reported; (3) clinical trials. Comments, editorials, letters to the editor, conference abstracts, and case reports were excluded.

Information sources We searched MEDLINE, Embase, and Cochrane Library databases from dates of inception until May 1, 2023, for previously published systematic reviews and meta-analyses about the prevalence of CMD in HFpEF patients using the search terms "Coronary microvascular" and "Heart Failure with Preserved Ejection

Fraction” with no language restrictions. No systematic review or meta-analysis of the prevalence of CMD in HFpEF was found. Due to the importance of this topic, we performed this systematic review to assess the prevalence of CMD in patients with HFpEF.

Main outcome(s) The prevalence of coronary microvascular dysfunction in heart failure with preserved ejection fraction.

Quality assessment / Risk of bias analysis Two reviewers (Wang and Lin) conducted the methodological assessment independently according to the STROBE Statement¹⁴, which is a checklist of items that should be included in reports. Studies with a total score of 0-7 were considered low quality; those with a score of 8-14 were considered moderate quality, and those with a score of 15-22 were considered high quality. Two authors (Lin and Wang) independently conducted data extraction with a predesigned form including fields for first author and publication year, sample size, sex, prevalence, main findings of the study and STROBE score.

Strategy of data synthesis Analyses were based on the prevalence of CMD in each included study using the random-effects model.

Subgroup analysis Subgroup analyses were conducted according to the following: (1) invasive coronary assessment and noninvasive coronary assessment; (2) endothelium-dependent CMD and endothelium-independent CMD; (3) CFR<2.0 and CFR<2.5; and (4) prospective versus retrospective studies.

Sensitivity analysis None.

Country(ies) involved China.

Keywords prevalence coronary microvascular dysfunction (CMD), heart failure with preserved ejection fraction (HFpEF), a systematic review and meta-analysis.

Contributions of each author

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