INPLASY

Adenosine as an Adjunctive Therapy for Acute Myocardial Infarction Undergoing Primary Percutaneous Coronary Intervention: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 15 January 2025 and was last updated on 15 January 2025.

INTRODUCTION

Review question / Objective This study aimed to assess the therapeutic effects of adjunctive adenosine administration on patients with acute myocardial infarction (AMI) undergoing PCI using a meta-analytic approach.

Condition being studied Adenosine administration can improve coronary blood flow in patients undergoing primary percutaneous coronary intervention (PCI); however, the therapeutic effects of adenosine on ST resolution and major cardiovascular events (MACEs) after PCI remain unclear.

METHODS

Search strategy ("adenosine") AND ("primary percutaneouscoronaryintervention" OR"STelevationmy- ocardial infarction" OR "primary PCI" OR "acute myocardial infarction" OR "no Reflow").

Participant or population AMI and undergoing PCI.

Intervention Intravenous or intracoronary administration of adenosine.

Comparator Placebo.

Study designs to be included RCT design.

Eligibility criteria The criteria for including studies in our analysis were as follows: (1) patients: AMI and undergoing PCI; (2) intervention: intravenous or intracoronary administration of adenosine; (3) control: placebo as the control; (4) outcomes: the primary outcomes including ST resolution and major adverse cardiovascular events (MACEs), while the secondary outcomes including no reflow, myocardial blush grade (MBG) 0 to 1, all-cause mortality, cardiac death, thrombosis, reinfarction, heart failure, advanced atrioventricular (AV) blocks, hypotension, ventricular tachycardia (VT)/ ventricular fibrillation (VF), bradycardia, creatine

kinase-MB (CK-MB) peak value, and left ventricular ejection fraction (LVEF); (5) study design: the study had to have an RCT design.

Information sources PubMed, Embase, the CochraneLibrary, and ClinicalTrials.gov (United States National Institutes of Health).

Main outcome(s) ST resolution and major adverse cardiovascular events (MACEs).

Additional outcome(s) No reflow, myocardial blush grade (MBG) 0 to 1, all-cause mortality, cardiac death, thrombosis, reinfarction, heart failure, advanced atrioventricular (AV) blocks, hypotension, ventricular tachycardia (VT)/ ventricular fibrillation (VF), bradycardia, creatine kinase-MB (CK-MB) peak value, and left ventricular ejection fraction (LVEF).

Quality assessment / Risk of bias analysis Cochrane Risk of Bias tool.

Strategy of data synthesis The therapeutic effects of adenosine compared to placebo were quantified as Relative Risks (RR) for categorical outcomes and Weighted Mean Differences (WMD) for continuous outcomes, each accompanied by a 95% Confidence Interval (CI). A random-effects model was employed in the calculation of the combined effect size to account for the inherent heterogeneity among the included studies.

Subgroup analysis Subgroup analyses were performed for ST resolution and MACEs based on age, male sex, hypertension, DM, current smoking, route of adenosine administration, and ischemic time to therapy.

Sensitivity analysis The stability of the combined findings was tested by conducting a sensitivity analysis, which involved iteratively excluding individual trials from the analysis to ascertain the consistency and reliability of the overall conclusion.

Language restriction No restriction.

Country(ies) involved China.

Keywords adenosine; acute myocardial infarction; percutaneous coronary intervention; cardioprotection; no-reflow; infarct size; reperfusion injury.

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