INPLASY PROTOCOL

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None declared.

Efficacy and safety of alprostadil in emergency PCI for improving microcirculatory disorders in patients with acute myocardial infarction：a meta-analysis of randomized controlled trials

Chen, Y[1].

Review question / Objective: **The aim of this meta-analysis of randomized controlled trials is to evaluate the efficacy and safety of alprostadil in emergency PCI for improving microcirculatory disorders in patients with acute myocardial infarction.**
Condition being studied: **ST-segment elevation myocardial infarction (STEMI) is coronary artery occlusion caused by thrombosis and insufficient myocardial blood perfusion in the corresponding blood supply area, Percutaneous transluminal coronary intervention (PCI) is the preferred treatment option for STEMI at this stage, which can re-open the obstructed coronary artery in time and restore ischemic myocardial blood perfusion. However, reports show that about 13.0% to 40.0% of patients can have No-reflow phenomenon (NRP) or Slow-reflow phenomenon (SRP) after PCI, and the cause is related to factors such as infarction-related arterial thromboburden and myocardial ischemia reperfusion injury (MIRI), so reasonable drug treatment is necessary to reduce blood viscosity after PCI. It is important to improve blood circulation and promote the recovery of blood supply. Alprostadil is prostaglandinE1 (PGE1) injection, which has good vascular endothelial cell protection and vasodilation effect, and it has been reported that its use in PCI patients with STEMI is beneficial to improve microcirculation and reduce ischemia-reperfusion injury. This study explores the application effect of alprostadil in PCI patients with STEMI and its prognosis in patients, aiming to provide reference for clinical diagnosis and treatment.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 26 March 2023 and was last updated on 26 March 2023 (registration number INPLASY202330105).

INTRODUCTION

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METHODS

Search strategy: We will search, with no time restrictions, the following databases for relevant English language literature:PubMed(MEDLINE), the Cochrane Central Register of Controlled Trials(CENTRAL) , Embase, Scopus, and Web of Science.The search string will be built as follows:((("No-Reflow Phenomenon"[MeSH]) OR ((((No Reflow Phenomenon[Title/Abstract]) OR (Slow-Flow Phenomenon[Title/Abstract])) OR (Phenomenon, Slow-Flow[Title/Abstract])) OR (Slow Flow Phenomenon[Title/Abstract]))) AND (("Alprostadil"[MeSH]) OR ((((((((((((((PGE1alpha[Title/Abstract]) OR (Prostaglandin E1alpha[Title/Abstract])) OR (PGE1[Title/Abstract])) OR (Lipo-PGE1[Title/Abstract])) OR (Lipo PGE1[Title/Abstract])) OR (Prostaglandin E1[Title/Abstract])) OR (Caverject[Title/Abstract])) OR (Edex[Title/Abstract])) OR (Prostavasin[Title/Abstract])) OR (Muse[Title/Abstract])) OR (Viridal[Title/Abstract])) OR (Vasaprostan[Title/Abstract])) OR (Minprog[Title/Abstract])) OR (Sugiran[Title/Abstract])) OR (Prostn VR[Title/Abstract])) OR (Prostine VR[Title/Abstract]))))) AND (randomized controlled trial[Publication Type] OR randomized[Title/Abstract] OR placebo[Title/Abstract]).The electronic database search will be supplemented by a manual search of the reference lists of included articles.

Participant or population: Adults with emergency PCI in patients with acute myocardial infarction(as diagnosed by a clinician, or using any recognized diagnostic criteria) will be included.

Intervention: Alprostadil was the main intervention. Alprostadil.

Comparator: Placebos and other drugs were the main comparators.

Study designs to be included: Randomized controlled trials(RCTs) will be included.

Eligibility criteria: Literature not explicitly stated by study type will be excluded.

Information sources: Electronic databases are the main source of information.

Main outcome(s): Thrombolysis in myocardial infarction(TIMI).

Additional outcome(s): TIMI myocardial perfusion grade(TMPG), Corrected TIMI frame count(cTFC), 30Day adverse events, 180Day adverse events.

Quality assessment / Risk of bias analysis: Two reviewers will independently assesses the quality of the selected studies according to the Cochrane Collaboration's tool for randomized controlled trials. Items will be evaluated in three categories: Low risk of bias, unclear bias and high risk of bias. The following characteristics will be

evaluated: Random sequence generation (selection Bias) Allocation concealment (selection bias) Blinding of participants and personnel (performance bias) Incomplete outcome data (attrition bias) Selective reporting (reporting bias) Other biases Results from these questions will be graphed and assessed using Review Manager 5.3.

Strategy of data synthesis: Risk ratio (RR) for both fixed and random effects models (weighting by inverse of variance) will be used. A continuity correction will also be used for cells with zero values. Between study heterogeneity will be assessed using the T2 x2 (Cochran Q) and I^2 statistics. According to the Cochrane handbook, the I^2 will be considered non- important (60%). Results will be assessed using forest plots and presented as RRs for the main outcome and secondary outcomes. An influence analysis will be performed to ascertain the results of the meta-analysis by excluding each of the individual studies. Publication bias will be assessed by a funnel plot for meta-analysis and quantified by the Egger method. Statistical analysis will be conducted using STATA software for Windows v16.0 (Stata Corp., College Station, Texas) [module "meta"] .

Subgroup analysis: We will consider subgroups such as dosage, route of administration, control measures.

Sensitivity analysis: Sensitivity analyses were performed using STATA software for Windows v16.0, articles with high sensitivity were removed if they were identified, and meta-regression was performed to identify sources of heterogeneity if no sources of sensitivity were identified.

Country(ies) involved: China.

Keywords: alprostadil, No-reflow phenomenon, AMI, PCI.

Contributions of each author:

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