INPLASY PROTOCOL

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Corresponding author:
Xiaojiao Cui

964764638@qq.com

Author Affiliation:
Chengdu IntegratedTraditional Chinese andWestern Medicine Hospital &Chengdu First People'sHospital.

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None declared.

Safety and efficacy of prourokinase injection during primary percutaneous coronary intervention in acute ST-segment elevation myocardial infarction: a systematic review and meta-analysis of randomized controlled trials

Xie, B[1]; Cui, XJ[2]; Wang, H[3]; Liu, FQ[4]; Yi, XQ[5].

Review question / Objective: **The objective of this meta-analysis is to evaluate safety and efficacy of prourokinase injection during primary percutaneous coronary intervention in acute ST-segment elevation myocardial infarction. The selected research method were Randomised Controlled Trials (RCTs).**
Condition being studied: **Acute ST-elevation myocardial infarction (STEMI), usually resulting from occlusive thrombus formation following coronary plaque rupture, is a common cause of morbidity and mortality worldwide. Primary percutaneous coronary intervention(PCI) to reopen the occluded coronary artery is the evidence-based standard of care for patients with acute STEMI. However, Previous reports indicated that about 30-50% STEMI patients cannot achieve effective myocardial reperfusion after PCI, even those with TIMI 3 blood flow. Insufficient myocardial perfusion will lead to myocyte necrosis, expand myocardial infarct size, damage cardiac functions, result in malignant arrhythmia, increase incidence of major adverse cardiac events(MACEs), and finally affect salvage quality of primary PCI. Several efforts have been made to identify strategies to improve myocardial perfusion after primary PCI, including intracoronary administration of prourokinase to inhibition of microthrombosis during primary PCI. However, the sample size of these trials was small and part of conclusions,eg. MACEs-free survival were inconsistent.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 25 July 2022 and was last updated on 25 July 2022 (registration number INPLASY202270108).

INTRODUCTION

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METHODS

Participant or population: Participants over 18years old with acute ST-segment elevation myocardial infarction who underwent primary percutaneous coronary intervention.

Intervention: Intracoronary administration of prourokinase combined with primary PCI.

Comparator: Primary PCI.

Study designs to be included: Randomised Controlled Trails (RCTs).

Eligibility criteria: Studies that investigate the safety and efficacy of prourokinase injection during primary percutaneous coronary intervention in acute ST-segment elevation myocardial infarction.All editorials, letters, review articles, systematic review, and meta-analysis and in vitro studies will be excluded.

Information sources: Search the databases,including PubMed, Web of Science, Cochrane Library, Embase.

Main outcome(s): Complete ST-segment resolution (STR) after PCI, TIMI flow after PCI, peak level of creatine kinase (CK) ,creatine kinase MB fraction(CK-MB) ,cardiac troponin, left ventricular ejection fraction , MACEs and hemorrhagic complications during follow up.

Quality assessment / Risk of bias analysis: Two investigators independently assessed the risk of bias in the included studies using the Cochrane Collaboration's tool, including the following items: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting and other biases. For each item , the risk of bias was rated as either “low,” “high” or “unclear”. If the evaluation results were inconsistent, issues were resolved by rechecking the source papers and discussing with the third investigator.

Strategy of data synthesis: The data was analyzed using the Review Manager version 5.3. For binary outcomes, the combined results were calculated as odds ratios (ORs) with 95% credible intervals (CIs). For continuous outcomes, mean differences (MD) with 95% CIs were used as the effect index .To assess between-study heterogeneity, we used the Cochran Q statistic and the I2 statistic.We pooled the study-specific estimate using a fixed-effect model in case of low statistical inconsistency (I2 ≤ 50%) or with a random-effect model in case of moderate or high statistical inconsistency (I2 >50%). Publication bias was evaluated using a funnel plot analysis if a sufficient number of trials (≥10 trials) was found.

Subgroup analysis: Data of MACEs were analysised according to time of follow up if a sufficient number of trials was found.

Sensitivity analysis: The sensitivity analysis was performed using Review Manager version 5.3 by excluding the studies that introduced significant heterogeneity to the analysis on outcomes, to assess the robustness of our conclusions.

Language restriction: English.

Country(ies) involved: China.

Keywords: prourokinase, primary percutaneous coronary intervention, ST-segment elevation myocardial infarction, myocardial perfusion.

Contributions of each author:
Author 1 - Bo Xie.
Author 2 - Xiaojiao Cui.
Author 3 - Hao Wang.
Author 4 - Fuqiang Liu.
Author 5 - Xiaoqing Yi.