INPLASY PROTOCOL

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Conflicts of interest:
None declared.

Renoprotective role of Remote Ischemic Conditioning in Patients Undergoing Percutaneous Coronary Intervention or Coronary Angiography: A Meta-analysis of Randomized Controlled Trials

Zuo, B[1]; Li, S[2]; Zhu, S[3].

Review question / Objective: **The renoprotective role of remote ischemic conditioning (RIC) in patients undergoing percutaneous coronary intervention (PCI) or coronary angiography is controversial at present. Thus, this meta-analysis aimed to explore the renoprotective role of RIC in patients undergoing PCI or coronary angiography.**
Participant or population: **Patients Undergoing Percutaneous Coronary Intervention or Coronary Angiography.**
Main outcome(s): **The primary outcome was AKI; secondary outcomes were postoperative serum creatinine levels, in-hospital mortality, and major adverse cardiovascular events (MACEs).**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 05 October 2021 and was last updated on 05 October 2021 (registration number INPLASY2021100016).

INTRODUCTION

Review question / Objective: **The renoprotective role of remote ischemic conditioning (RIC) in patients undergoing percutaneous coronary intervention (PCI) or coronary angiography is controversial at present. Thus, this meta-analysis aimed to explore the renoprotective role of RIC in patients undergoing PCI or coronary angiography.**

Condition being studied: **Despite myocardial reperfusion via percutaneous coronary intervention (PCI), the mortality of myocardial infarction patients remains substantial; this benefit is attenuated by**

reperfusion injury, which accounts for approximately 50% of the final myocardial infarct size. Therefore, new therapeutic strategies are needed to protect the heart against myocardial reperfusion injury. Remote ischemic conditioning (RIC) is a nonpharmacological tool used in transient episodes of nonlethal ischemia in nontarget organs or tissues, such as limbs, which may confer powerful protection on remote organs, such as the heart, kidney and so on, against prolonged lethal ischemia reperfusion injury. Acute kidney injury (AKI), defined as an absolute elevation in serum creatinine of 0.5mg/dL and/or an increase of ≥25% above baseline within 48-72 hours after contrast agent administration, is a frequent complication of PCI related to the increase in morbidity and mortality5, 6. In patients with AKI, 8% need to receive dialysis treatment, and approximately 30% die during the index hospitalization. At present, the cardioprotective role of RIC in patients undergoing PCI has drawn much attention. Meanwhile, the renoprotective role of RIC, especially in patients undergoing PCI, has been gradually addressed in recent years8. In 2015, Zuo et al conducted a meta-analysis to study the renoprotective role of RIC in patients undergoing PCI. They found that RIC may not only play a powerful cardioprotective role but also might prevent AKI in patients undergoing PCI. However, inconclusive data were acquired due to the limited sample size. Thus, this study targeting the renoprotective role of RIC in patients undergoing PCI was performed.

METHODS

Participant or population: Patients Undergoing Percutaneous Coronary Intervention or Coronary Angiography.

Intervention: Remote ischemic conditioning Remote Ischemic Conditioning.

Comparator: Remote ischemic conditioning group vs.control group.

Study designs to be included: Prospective randomized controlled trials (RCTs).

Eligibility criteria: Patients undergoing PCI or coronary angiography (≥18 years old); presence of RIC and control groups; included data on the incidence of AKI.

Information sources: grey literature and contact with authors, trial registers.

Main outcome(s): The primary outcome was AKI; secondary outcomes were postoperative serum creatinine levels, in-hospital mortality, and major adverse cardiovascular events (MACEs).

Quality assessment / Risk of bias analysis: Quality evaluation was achieved using the Cochrane's Risk of Bias Tool according to the following aspects: random sequence generation; allocation concealment; blinding of participants and personnel; [4] blinding of outcome assessors; incomplete outcome data; [6] selective outcome reporting; and other potential bias.Potential publication bias was evaluated using the Egger test.

Strategy of data synthesis: Studies were enrolled if the following criteria were met: prospective randomized controlled trials (RCTs) with adequate designs; patients undergoing PCI or coronary angiography (≥18 years old); presence of RIC and control groups; included data on the incidence of AKI. Only abstracts and congress articles were excluded. All data were assessed by two researchers independently, with disagreements resolved by discussion.

Subgroup analysis: Subgroup analyses were planned for possible confounding factors that had the potential to alter the rate of AKI, including primary PCI, electvie PCI and so on.

Sensitivity analysis: We performed a sensitivity analysis by comparing the findings of the meta analysis of high- and low-quality studies together with only those studies that had been ranked as high quality.

Country(ies) involved: China.

Keywords: Remote Ischemic Conditioning; Percutaneous Coronary Intervention; Renoprotection.

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