INPLASY

Triglyceride glucose index can predict the risk of contrast-induced nephropathy undergoing percutaneous coronary intervention: a systematic review and meta-analysis

Corresponding author:

shuxiong ge

17855848216@163.com

Author Affiliation:

The Affiliated People's Hospital of Ningbo University.

Ge, SX; Yan, JL; Wang, H.

ADMINISTRATIVE INFORMATION

Support - No.

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

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202460115

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 28 June 2024 and was last updated on 28 June 2024.

INTRODUCTION

Review question / Objective A growing number of studies have delivered the idea that triglyceride glucose index(TyG) can be a promising predictor of contrast-induced nephropathy(CIN)in patients after percutaneous coronary intervention(PCI). Herein, this meta-analysis was aimed to investigate the association between TyG and CIN after treating with PCI.

Condition being studied Contrast-induced nephropathy(CIN) is a common and serious disease, which refers to acute renal failure complications caused by contrast agents during arteriography or interventional surgery. The diagnostic criteria for contrast-induced nephropathy is an increase in serum creatinine of ≥26.5 mmol/l(0.3 mg/dl) or more than 50% compared to preoperative creatinine(1). Despite the deepening of clinicians' understanding of CIN and the increasing awareness of risk assessment, the incidence of CIN continues to rise with the increasing use of contrast agents in clinical practice. Previous studies have reported that the incidence of CIN after percutaneous coronary intervention was about 15%-35%(2). Many potential factors increase the risk of CIN, including advanced age, congestive heart failure, diabetes, chronic renal insufficiency, and the type and amount of contrast agent(3). Although contrast-induced nephropathy is a self-limiting disease, it can prolong hospitalization, increase death and economic burden during hospitalization. Therefore, early identification of high-risk patients with CIN and the timely preventive measures are essential for reducing complication in patients after percutaneous coronary intervention.

METHODS

Participant or population For the qualified studies which must satisfy the following criteria: (1) patients were exactly diagnosed CIN after PCI or arteriography; (2) provided the number of patients positive with contrast-induced nephropathy in

different TyG stages; (3) designed as a Cohort control project.

Intervention Evaluating the accuracy of high triglyceride glucose index in predicting contrast induced nephropathy after PCI.

Comparator Preoperative hydration intervention was performed for people at high risk of contrast nephropathy.

Study designs to be included Retrospective studies, randomized controlled trials and meta-analyses.

Eligibility criteria For the qualified studies which must satisfy the following criteria: (1) patients were exactly diagnosed CIN after PCI or arteriography; (2) provided the number of patients positive with contrast-induced nephropathy in different TyG stages; (3) designed as a Cohort control project. What's more, if the inclusive studies meet the following criteria must be excluded: (1) review articles, case reports, comments, cell and animals research type; (2) lack of correlation information for calculating the OR; (3) studies had identical or overlapping data, only the largest patient cohorts were selected to analysis to avoid duplicate information.

Information sources A systematic search in the electronic bibliographic databases of PubMed, Embase , Scopus and Web of databases was performed to collect relevant studies.

Main outcome(s) The pooled odds rations (OR) with 95% confidence intervals were calculated by random-effects model, assessing the strength of association between TyG and CIN. Subgroup analysis assessed the sources of heterogeneity.

Quality assessment / Risk of bias analysis To guarantee the quality of the eligible studies for meta-analysis, the Newcastle-Ottawa scale (NOS) was utilized(9). The NOS scores ranged from 0 to 9 and studies with NOS scores ≥ 6 were considered as methodologically high quality.

Strategy of data synthesis The odds Ratio (OR) and 95%CIs were used to estimate the association between TyG and the CIN in patients underwent PCI. The statistical significance of OR was calculated by Z test, P0.05 a fix-effect model was applied. Otherwise a random-effect model was used. The subgroup analysis and meta-regression were conducted to explore potential sources of heterogeneity. Publication bias was inspected using Begg's sand Egger's test liner regression.To

evaluate the robustness of the summary estimates and identify potential sources of heterogeneity, a sensitivity analysis will be conducted by systematically eliminate the included studies one by one from the pooled analysis.

Subgroup analysis Subgroup analysis assessed the sources of heterogeneity.

Sensitivity analysis A sensitivity analysis will be conducted by systematically eliminate the included studies one by one from the pooled analysis.

Country(ies) involved China and Turkey.

Keywords triglyceride glucose index; contrast-induced nephropathy; meta-analysis; percutaneous coronary intervention; predictor.

Contributions of each author
Author 1 - shuxiong ge.
Author 2 - Jinlin yan.
Author 3 - hui wang.