INPLASY

Meta-analysis of risk factors for postoperative acute kidney injury in patients with valvular heart disease

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ADMINISTRATIVE INFORMATION

INTRODUCTION

Review question / Objective To identify the risk factors of acute kidney injury after heart valve through meta-analysis and provide a basis for early identification, prevention and improvement of postoperative acute kidney injury. Medical staff can identify, prevent and treat the postoperative acute kidney injury as soon as possible according to the above risk factors, and take timely measures to improve the related diseases of the postoperative acute kidney injury.

Condition being studied Heart valve disease refers to the change of heart function caused by the abnormal structure or function of valves, which is one of the most common diseases in cardiac surgery。 In China, there are about 25 million patients with heart valve disease, Surgery is the most important treatment for heart valve diseases. With the development of cardiopulmonary bypass and other technologies, the safety and therapeutic effect of surgery have also been improved, but there are still many complications after surgery。

Acute kidney injury (acute kidney injury, AKI) is one of the serious complications after heart valve surgery, mainly manifested by the rapid decline of renal function, AKI after heart valve surgery is a clinically common type of AKI, second only to sepsis-related AKI, and its incidence ranges from 5% to 42% due to different definitions。 AKI is a strong predictor of patient death after valve surgery, with serum creatinine elevated over 10% in the first postoperative week, predicting and identifying patients at risk of death, Compared with patients without AKI, patients with AKI increased the risk of death by 6 to 18 times, which could significantly prolong the postoperative hospital stay and increase the medical costs. There are many studies on the risk factors of AKI after heart valve surgery, but the results of different researchers are inconsistent due to the different focus.

METHODS

Participant or population (1) patients aged 18 years undergoing heart valve replacement, heart

valvuloplasty, heart valve repair; (3) the definition of acute kidney injury meets KINGGO or RIFLE diagnostic criteria;the study type is a cohort study and a case-control study.

Intervention Heart valve surgery.

Comparator (1) literature where only abstract or full text is not available; (2) non-Chinese and English literature; (3) conference literature; (4) repeated publications; and (5) preoperative patients with AKI were not excluded.

Study designs to be included Case-control and cohort studies.

Eligibility criteria Exposure factors: basic conditions related to postoperative acute kidney injury, preoperative disease, preoperative medication, intraoperative factors and postoperative factors.

Information sources 8 databases, including Chinese Academic Journal full Text Database (CNKI), Wanfang Database, VIP Database, China Biomedical Literature Service System, PubMed, Web of Science, cochrane library and Embase. The search time was from the establishment of the database to June2024.

Main outcome(s) Outcome measures: risk factors related to acute kidney injury after heart valvesurgery.

Quality assessment / Risk of bias analysis Based to the case-control study and cohort study literature quality evaluation, including the selection of research subjects, comparability between groups, measurement of exposure factors, 9 points, the higher the score, the higher the literature quality, except for the highest comparable 2 points, other items can highest 1 points, the full score of 9 points, excluding less than 6 literature。Information and data extraction of the final literature meeting the standards, which mainly includes the authors information, year of publication, literature type, sample size, age, gender and risk factors involved.

Strategy of data synthesis The literature was screened by NoteExpress, and the data was analyzed by Revman5.4. The counting data were odds ratio (odd ratio, OR), the measurement data was expressed by the weighted difference (weighted mean difference, WMD), and the interval estimate was expressed by 95% confidence interval (95%CI).

Subgroup analysis Not.

Sensitivity analysis If the heterogeneity test shows P＞ 0.1, I2＜50% suggested that the study had homogeneity, using a fixed effects model; if the heterogeneity test showed P 50%, indicating heterogeneity between studies, a random effect model was used, and the source of heterogeneity was found by sensitivity analysis. If the heterogeneity is still large, a random effect model was used to analyze the expression results.

Country(ies) involved China.

Keywords cardiopulmonary bypass; heart valve; acute kidney injury, meta-analysis; risk factors.

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