

# Analysis of Risk Factors and Intervention Strategies for Acute Kidney Injury After Cardiac Valve Replacement [Letter]

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## Dear editor

We are interested in the recently published research article<sup>1</sup> entitled “Analysis of Risk Factors and Intervention Strategies for Acute Kidney Injury After Cardiac Valve Replacement” in the Journal of Inflammation Research. We appreciate and congratulate the novel research work conducted by the Jiang Y. team.

The authors aimed to investigate the risk factors and intervention strategies for the development of acute kidney injury (AKI) after cardiac valve replacement with extracorporeal circulation. The investigators selected 106 patients diagnosed with heart valve disease and undergoing extracorporeal circulation heart valve replacement surgery from January 2021 to December 2021 in the Department of Cardiac and Major Vascular Surgery of our hospital. The two groups were divided into AKI and non-AKI groups according to whether acute kidney injury occurred after surgery, and the preoperative, intraoperative, and postoperative clinical data were compared. Single-factor analysis and multi-factor logistic regression analysis were used to explore the risk factors for acute kidney injury after extracorporeal heart valve replacement, and to improve the prognosis by giving kidney function protection strategies as early as possible. The research results of Jiang Y's team showed that preoperative blood creatinine >130umol/l, LVEF <45%, combined infective endocarditis, extracorporeal circulation time >2h, intraoperative and postoperative hypotension, low cardiac output, and postoperative bacteremia were independent risk factors for postoperative AKI.

We acknowledge the validity of the research findings, but we have identified specific concerns that need attention.

Firstly, because rheumatic valvular heart disease is a chronic disease, most patients have cardiac insufficiency and renal insufficiency before surgery. After multiple factors, such as anesthesia, surgery and cardiopulmonary bypass, AKI after cardiac surgery reaches 5%–40.2%.<sup>2</sup> For patients with renal dysfunction combined with chronic heart failure, the literature reports that preoperative blood ultrafiltration dehydration can also be taken to reduce the fluid load of the heart and kidney, maintain the acid-base and electrolyte balance, and avoid the acute aggravation of cardiac and kidney insufficiency after cardiopulmonary bypass (CPB) surgery.<sup>3</sup>

Secondly, the study did not analyze the perioperative serum N-terminal pro-brain natriuretic peptide (NT-pro BNP) level, and could also explore the correlation between NT-pro BNP and postoperative AKI. Recombinant human brain natriuretic peptide is a synthetic brain natriuretic-like peptide substance with the nearly consistent biological effect as the natural brain natriuretic peptide. The literature reports that the treatment with recombinant human brain natriuretic peptide after surgery early in patients with grave rheumatic heart valve disease can effectively improve the cardiomyocyte function, alleviate the degree of kidney damage, and promote the recovery of patients.<sup>4</sup> Jiang Yi's team mentioned that the choice of recombinant human brain natriuretic peptide to treat postoperative renal abnormalities, but if the NT-pro BNP level were monitored, it can provide more support for the research results.

To summarize, addressing these concerns will improve the reliability of the research findings and their clinical application prospects in routine clinical practice.

## Abbreviations

AKI, acute kidney injury; Scr, serum creatinine; LVEF, left ventricular ejection fraction; SIE, subacute infective endocarditis; CPB, cardiopulmonary bypass; NT-pro BNP, N-terminal pro brain natriuretic peptide.

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## Disclosure

The authors report no conflicts of interest in this communication.

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