LETTER

Expression and Signiffcance of KIM-1, NGAL, and HO-1 in Patients with Acute Kidney Injury After Cardiac Valve Replacement [Letter]

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Dear editor

We are interested in the recently published research article[1] entitled "Expression and Significance of KIM-1, NGAL and HO-1 in Patients with Acute Kidney Injury After Cardiac Valve Replacement" in the Journal of Inflammation Research. We appreciate and congratulate the novel research work conducted by the Zhang B. team.

The authors aimed to investigate the changes and significance of perioperative expression levels of kidney injury molecule-1 (KIM-1), neutrophil gelatinase-related lipocalin (NGAL), and heme oxygenase-1 (HO-1) in patients with acute kidney injury (AKI) after cardiac valve replacement under cardiopulmonary bypass(CPB).The investigators selected 80 patients, were divided into AKI group and non-AKI group based on the postoperative occurrence of AKI.The expression levels of urinary KIM-1, NGAL, serum creatinine(Scr), urea nitrogen, and HO-1 were compared between the two groups before surgery and at 12 h, 24 h, and 48 h after surgery.The levels of KIM-1, NGAL, and HO-1 in patients after CPB cardiac valve replacement are increased, but the increase in patients in AKI group is more significant. The authors concluded that AKI can easily occur after cardiac valve replacement and postoperative expression levels of KIM-1, NGAL, and HO-1 can be early warning indicators of postoperative AKI.

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

Firstly, the selected cases in the study all were underway cardiac valve replacement with CPB, which lacked the comparison of beating-heart and arrested-heart postoperative AKI.According to literature report,[2] in patients undergoing beating-heart and arrested-heart replacement of mitral valve, the two groups increased KIM-1 at 30 minutes after the start of CPB, but the beating-heart group had recovered to normal level 72 h after surgery, while the arrested-heart group still failed to return to the preoperative level after 72 h. The concentration of KIM-1 in the beating-heart group significantly lower than that in the arrested-heart group ($P<0.05$).Non-stop jumping operation ensures effective kidney perfusion to some extent, suggesting that the beating-heart cardiac surgery might reduce renal dysfunction.

Secondly, the study did not explore the correlation of perioperative NGAL, KIM-1, HO-1 and sCr levels, and could further apply the ROC curve to evaluate the value of the above acute kidney injury detection indicators for the early diagnosis of AKI after CPB heart valve replacement.According to literature report,[3] The AUC was 0.829 when urinary KIM-1 was performed to diagnose AKI at 2h after CPB.When 259 ng/L was taken as the diagnostic cut-off value for AKI, its sensitivity and specificity for the diagnosis of AKI were respectively 83.3% and 62.5%.

The occurrence of AKI after cardiac surgery is a complex process of multifactor participation and mutual influence,[4] while Scr and urea nitrogen cannot early and effective monitoring of the occurrence of AKI, which makes it urgent for early diagnostic markers of AKI to monitor renal function, early intervention and treatment of AKI to improve the prognosis of patients and reduce mortality.

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; NGAL, neutrophil gelatinase-associated lipocalin; KIM-1, kidney injury molecule-1; HO-1, heme oxygenase-1; CPB, cardiopulmonary bypass.

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Disclosure
The authors report no conflicts of interest in this communication.

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