Commentary: Risk stratification in infective endocarditis: The emerging role of the liver–heart–kidney axis

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The surgical care of patients with isolated mitral valve infective endocarditis (IE) represents a multifaceted conundrum with outcomes influenced by several patient- and pathogen-specific features. In this frame, the contribution by Moore and colleagues1 provides an interesting amount of clinical information feeding the ongoing debate, and the Cleveland Clinic Endocarditis Study Group must be commended for several reasons.

First, the authors report excellent outcomes: an overall in-hospital mortality of 3.8% (0% after standard repair, 7.0% after extended repair, 4.1% after native valve replacement, and 5.0% after prosthetic valve replacement) in 326 patients with isolated native mitral valve IE and 121 patients with prosthetic mitral valve IE undergoing surgery over a 20-year time span. As per the existing guidelines,2 the authors elected repair to be the procedure of choice whenever considered technically feasible. Notably, all operations were performed by surgeons considered experienced in mitral valve repair (ie, performing >25 repairs per year3), and the repair rate increased over the course of the study period, spanning from standard techniques to more complex with multiple pericardial patches and annular reconstruction.

Secondly, the authors reported the thought-provoking finding of repair showing an apparent superiority compared with replacement. Survival rates at 1, 5, and 10 years was 91%, 75%, and 62% in the repair group and 86%, 62%, and 44% in the replacement group, respectively, but after multivariable risk adjustment no survival difference was detected between the groups. These findings warrant further investigations to strengthen the evidence in support of those patient-specific features that must drive the therapeutic decision-making process.

Finally, the authors cast some light on the role of liver and kidney dysfunction in the pathophysiology of IE. They found preoperative kidney dysfunction requiring dialysis to be the most powerful determinant of early and late mortality, thus strengthening the existing evidence on the influence of cardiorenal syndrome on outcomes in patients with IE.4-6 The authors also found hyperbilirubinemia to be a risk factor for recurrence of disease. Although they did not stratify outcomes for conjugated bilirubin (CB) level versus unconjugated bilirubin level, previous studies have shown that elevated CB level is an independent predictor of in-hospital and long-term mortality.7 Studies have also shown that a J-shaped relationship exists between CB plasma levels and in-hospital adverse events rates in IE,8 probably due to the anti-inflammatory and antioxidant properties of CB.9,10 With the concomitant role of CB also as a marker of cardiogenic liver injury (potentially related to hypoxia-induced impairment in hepatocytic microsomal conjugation and biliary secretion9), experimental studies have demonstrated that pharmacologic preconditioning with N-acetylcysteine11 or growth hormone12 may prevent postoperative liver dysfunction. However, this has never been translated into human investigations.
With surgical outcomes improving over time, efforts are needed to further elucidate the implications of combined liver–heart–kidney dysfunction in the setting of IE, and to consequentially find additional clinical and molecular targets for accurate risk stratification and potential therapeutic interventions.

References