Determinants of Early Prognosis after Acute Type A Aortic Dissection Surgery

Sir,

We have read with great interest the article by Yang et al. titled “Predictive Value of Postoperative Indices in Acute Stanford Type A Aortic Dissection”.1 First of all, we congratulate the authors for their valuable contribution to the literature. However, we would like to discuss some points about Acute Stanford Type A Aortic Dissection (ATAAD) surgery and its early prognosis.

In their retrospective observational study, the authors included hospitalised patients who were diagnosed with ATAAD and admitted to the Second Hospital of Shandong University, Jinan. They excluded patients aged <18 years with non-type-A aortic dissection operation, failure to perform surgery, voluntary discharge, and patients with incomplete data. Finally, 295 patients were included in the study and the mortality rate was 7.8% at discharge. In this study, the authors investigated the effect of postoperative blood values on mortality.1

ATAAD is a major cardiovascular emergency and has a very high risk of mortality. Early mortality in these patients depends on many factors, and especially the preoperative clinical condition of the patient and the surgical procedure performed significantly affect mortality.2 Many factors affect mortality, such as the use of heart support devices, including an intra-aortic balloon pump, in the perioperative period, cardiopulmonary bypass duration, brain protection methods, whether or not accompanied by coronary artery bypass surgery, the presence of cerebral ischaemia, visceral organ ischaemia, and bleeding.3

In the recent years, various markers obtained from routine blood parameters have been investigated in the prognosis of many cardiovascular diseases.4-6 In their study, the authors reported low postoperative haemoglobin [Odds ratio (OR): 0.958, 95% confident interval (CI): 0.923 - 0.994, p=0.023], high creatinine (OR: 1.006, 95% CI: 1.000 - 1.012, p=0.045), and Troponin I elevation (OR: 1.047, 95% CI: 1.020, 1.075, p=0.001) to be independent predictors of mortality. However, it is very important that known risk factors (for ATAAD: surgery type, perfusion type, presence of malperfusion, etc.) are included in the risk analyses performed with routine blood parameters.6

In this regard, we believe that the authors’ answers to some questions will increase the value of the study. Were similar brain protection methods used in both patient groups (mortality and survival)? What was the perioperative visceral ischaemia rate and was it similar between the groups? How many patients did you perform concomitant coronary artery bypass surgery on? Was there a difference between the groups? How many patients underwent total arch replacement? Were the use of amounts of perioperative blood product similar between the groups?

We believe that the answers to the above questions will significantly improve the scientific value of the paper.

COMPETING INTEREST:
The authors declared no conflicting interests with any other parties.

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AUTHOR’S REPLY

Sir,

Thank you very much for your letter.

Indeed, within the current study, the risk analysis for patients experiencing acute Type-A aortic dissection (ATAAD), conducted using conventional blood indices, did not encompass various risk factors such as surgical modality and the occurrence of malperfusion, among other aspects.

As an exceedingly perilous cardiovascular crisis, individuals with ATAAD are typically admitted to the Intensive Care Unit (ICU) post-surgery for comprehensive monitoring and requisite treatment. Our study sought to discern a straightforward, practicable, and broadly applicable clinical indicator, conceived from the standpoint of ICU medical professionals. This indicator aimed to streamline the early detection of high-risk ATAAD patients, subsequently enabling clinical practitioners to promptly employ preventive measures, minimising disease progression to the fullest extent and thereby mitigating postoperative mortality within this specific patient group. Consequently, our research did not encompass an investigation into cerebral safeguarding methodologies, perioperative visceral ischaemia rates, the frequency of concomitant coronary artery bypass grafting surgeries, total aortic arch replacement surgery rates, or perioperative blood product consumption. It is imperative to note that all the aforementioned metrics exert an influence on alterations in routine indicators following the surgery, which was a focal point of our study.

Preserving brain function is a critical concern during the intraoperative phase of ATAAD. The common practice involves employing profound hypothermia and selective cerebral perfusion. However, detailed statistics and analysis regarding cardiopulmonary bypass duration and the pause time during deep hypothermic circulation had not been thoroughly examined. Consequently, we were unable to ascertain whether distinctions existed among patients with varying outcomes.

Certain studies had indicated potential associations between perioperative inadequate visceral perfusion, utilisation of blood products during the perioperative period, and the frequency of coronary artery bypass grafting surgeries with the mortality rate among patients undergoing surgery for ATAAD. However, it is important to emphasise the necessity for further verification of these conclusions. Meanwhile, research by Conzelmann et al. demonstrated a lack of significant disparity in early mortality between patients who underwent ascending aortic repair excluding the arch and those necessitating hemiarch or total arch replacement.

To enhance patient care, these suggestions underscore the necessity for a more comprehensive study to assess pertinent influencing factors.

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