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Interrupted warm blood cardioplegia

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I read with interest the article by Dr. T. Isomura and associated [2], "Interrupted warm blood cardioplegia for coronary artery bypass grafting". Although I agree with the conclusion of the study, there are a few points that need to be clarified.

1. Many well controlled studies have proved strongly the superiority of blood cardioplegia when it is compared to crystalloid one [3]. Although the study that was carried out by T. Isomura used warm blood cardioplegia, this was compared to cold crystalloid rather than cold blood cardioplegia. In other words this is a comparison between different modalities of cardioplegia in which more than one factor is involved. Therefore their results can be attributed to the blood part of the cardioplegia rather than the temperature.

2. The cross-clamp times in the cases that were reported in the study were relatively short (67.9±22.0 and 59.0±21.4 min). I wonder whether the authors have any experience with interrupted warm blood cardioplegia in cases with longer clamp times.

I use warm blood cardioplegia continuously and intermittently very often. As we reported in our study "The safety of intermittent warm blood cardioplegia" [1], we think it is safe and practical to use warm blood cardioplegia intermittently in the usual cases which require short clamp times. However we are still reluctant to apply it when a prolonged clamp time is needed.

References

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Reply

We appreciate the comments by Dr. Ali regarding our article "Interrupted warm blood cardioplegia for coronary artery grafting" [4]. Similar comments were raised by reviewers when we submitted this article to the journal, therefore, in the discussion section, we explained the reasons why we compared two different types of cardioplegia (page 137, lines 42–51). In fact, as seen in the Table 2, the components of the cardioplegic solution were different in the two groups. Theoretically, the results should be compared in warm and cold blood cardioplegia with the same components of the cardioplegic solution as mentioned by Dr. Ali. However, in this series we described the effective myocardial protection provided by interrupted antegrade perfusion of warm blood cardioplegia by comparing it to our ordinary cardioplegic solution. In this series the longest time for aortic cross-clamp was 113 min in warm blood and 90 min in cold crystalloid. The body temperature during extracorporeal circulation in the warm group was kept 32–34°C, as described in the paper, and the clamp time was more than 90 min (1) in four patients but there were no perioperative morbidities such as low cardiac output, ECG changes or perioperative myocardial infarction in such patients. It now seems to be possible to prolong the ischemic time for intermittent antegrade warm blood cardioplegia to 20–30 min without complications (reference [2] and personal communications).

Since 1995, I have preferred to use the interrupted tepid (30–32°C) blood cardioplegia [3] (avoid rewarming the solution and simplify the technique) with a systemic temperature of 32–34°C in all patients receiving open heart surgery. The time for interruption of the delivery of cardioplegic solution is 20–25 min for valve surgery. The longest cross-clamping times were 147 min in a 59-years old woman receiving mitral valve replacement, tricuspid annuloplasty, and "Maze" operation for mitral and tricuspid regurgitation, atrial fibrillation, and severe congestive heart failure, and 153 min in a 61-year-old man receiving aortic valve replacement and quadruple coronary artery bypass for severe aortic stenosis, ischemic heart disease and unstable angina. After operation, both patients recovered well with no perioperative complications.

References

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