

Safety Trial of Normothermia on Cardiopulmonary Bypass

Sir,

It is a practice of our institute to do the cardiac surgical procedure with hypothermia during cardiopulmonary bypass (CPB). Hypothermia reduces tissue metabolic demands; however, the perfusionist reduces the blood flow as temperature decreases. Patients with mild hypothermia (32°C) during CPB have increased postoperative renal failure, neurocognitive dysfunction, and length of intensive care unit (ICU) stay.^{1,2}

We conducted a safety trial with a sample size of 40 patients to evaluate the effects of normothermia on organ systems in CPB during various cardiac surgical procedures.

For this study, we selected 20 consequent patients of a single surgeon with normothermia (36-37°C) (Group A) and 20 consequent patients with mild hypothermia (32°C) (Group B). Temperatures were measured at the arterial outlet by a perfusionist and maintained at 36-37°C. Pre- and postoperative data including complete blood count, creatinine and electrolytes, arterial blood gases (ABGs), lactate, coagulation profile, and liver function tests (LFTs) were collected. The outcomes of this study included acute kidney and liver injury in terms of raised creatinine and LFTs. All patients received standard perioperative monitoring. We also assessed the length of the ICU and hospital stay.

In the normothermic Group A, the mean postoperative serum creatinine was 1.06 ± 0.2 mg/dl, serum bilirubin was 1.4 ± 0.6 mg/dl, troponin was 9.4 ± 2.6 pg/ml, APTT was 18.2 ± 6.5 seconds, INR was 1.2 ± 0.3, serum lactate was 2.6 ± 1.9 mg/dl, number of blood product transfusions was 0.3 ± 0.5, and length of hospital stay was 4.4 ± 0.7 days.

In the hypothermic Group B, the mean postoperative serum creatinine was 1.1 ± 0.3 mg/dl, serum bilirubin was 1.41 ± 0.8 mg/dl, troponin was 15.8 ± 6.4 pg/ml, APTT was 19.2 ± 6.5 seconds, INR was 1.2 ± 0.3, serum lactate was 3.4 ± 1.3 mg/dl,

number of blood product transfusions was 2 ± 0.5, and length of hospital stay was 5 ± 0.9 days.

The safety trial has established the good and comparative results of normothermia as compared to mild hypothermia on CPB at our institute. On the basis of this safety trial, a larger study can be planned to establish more comprehensive results.

COMPETING INTEREST:

The authors declared no competing interest.

AUTHORS' CONTRIBUTION:

WS: Contributed to concept, design of research, and acquisition of data.

FR: Drafting of manuscript.

FI: Compilation of data.

All authors approved the final version of the manuscript to be published.

REFERENCES

1. Bianco V, Kilic A, Aranda-Michel E, Dunn-Lewis C, Serna-Gallegos D, Chen S, *et al.* Mild hypothermia versus normothermia in patients undergoing cardiac surgery. *JTCVS Open* 2021; **7**:230-42. doi: 016/j.xjon.2021.05.020.
2. Linassi F, Maran E, De Laurenzis A, Tellaroli P, Kreuzer M, Schneider G, *et al.* Targeted temperature management in cardiac surgery: A systematic review and meta-analysis on postoperative cognitive outcomes. *Brit J Anaesthesia* 2022; **128**(1):11-25. doi: 10.1016/j.bja.2021.09.042.

Wardah Saleem, Furqan Ahmed Raheel and Fayaz Iqbal

Department of Surgery, National Institute of Cardiovascular Diseases, Karachi, Pakistan

Correspondence to: Dr. Wardah Saleem, Department of Surgery, National Institute of Cardiovascular Diseases, Karachi, Pakistan

E-mail: wardah.saleem@gmail.com

Received: February 27, 2023; Revised: May 25, 2023;

Accepted: May 27, 2023

DOI: <https://doi.org/10.29271/jcpsp.2023.11.1334>

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