Commentary: Questioning the importance of the circulatory arrest time in aortic surgery in the postoperative renal function deterioration

Juan Bustamante-Munguira, MD, PhD, MSc, MPH

Numerous studies relate hypothermia, due to the possible endothelial injury it generates, with the development of acute kidney injury (AKI) during the postoperative period. However, little is known about the impact that circulatory arrest (CA) time has on the appearance of AKI. There are discrepancies in the few published studies. Nota and colleagues, in a sample of 116 consecutive patients with aortic arch aneurysm, found that there was a relationship between CA time and AKI; on the opposite side, Ghincea and colleagues, in a series of 295 consecutive patients who underwent open aortic arch surgery, and Vekstein and colleagues, in a series of 759 consecutive patients who underwent proximal aortic surgery, did not observe that CA time was a risk factor for AKI. This last group also establishes that AKI is independent of the degree of hypothermia.

Hu and colleagues conclude that CA time is not a determining factor in the development of AKI. This aspect can be of great importance for surgical practice. It would be very important to know at what temperature the CA was performed and if it was the same in all cases. This would allow us to know the possible relationship between temperature ranges in which CA is performed and its influence on the development of AKI and would even allow us to know what the optimal temperature range in which to perform CA to reduce the appearance of AKI is. Otherwise, temperature was measured through the skin and nasopharynx; it would be more appropriate to have determined the bladder temperature, since it better reflects the visceral temperature. Relevant information that they report is that “LBI duration 1-40 minutes 301 (OR, 0.59 [95% CI, 0.38, 0.90], \( P = .015 \)) was associated with less AKI compared to the no CA”\(^\text{4}\); this could be in relationship to ischemic preconditioning, as occurs in other clinical contexts, and that could have repercussions in clinical practice.\(^\text{5}\)

References

CENTRAL MESSAGE
Circulatory arrest time in aortic surgery may not be as important in the postoperative deterioration of the renal function as it was supposed.