Commentary: Cardiac surgery around the clock!

Michele Di Mauro, MD, PhD,a Massimiliano Foschi, MD,a Francesco Amendolara, MD,b and Antonio M. Calafiore, MD

Circadian rhythms (CRs) are endogenous autonomous oscillators of physiological activities resulting 24-hour day/night cycles that allow organisms to adapt to a fluctuating environment.  

How much CRs could influence the outcome of patients undergoing cardiac surgery in the morning versus in the afternoon is still debated.1–3 In this scenario, the multicenter study by Nemeth and colleagues4 try to shed light on the actual prognostic role of daytime variation. The strengths of this study are the large size of the cohort and the possibility to subanalyze the most frequent cardiac operations such as coronary artery bypass grafting and aortic valve replacement. The authors clearly demonstrate that undergoing cardiac surgery in morning versus in the afternoon does not influence the outcome. Why is that? 

To answer that question, we should be asking how much morning surgery can be different from afternoon surgery in terms of CR desynchronization. The circadian clock can be divided into input pathway, core circadian clock, and output pathway.1 A series of external timing cues called synchronizers can reset the circadian clock and place all cells at the same phase of circadian oscillation. Synchronizers include light, feeding, arousal stimuli (eg, social interactions, exercise, and restraint stress), temperature, chemical factors, and oxidative stress. Intriguingly, sedatives, anesthetics, surgical stress, and the intensive care unit environment have all been shown to disrupt the circadian system in patients, altering all the synchronizers independent of the time of day for which surgery is scheduled.6

However, chronobiology should be applied also during the perioperative period. For instance, acute coronary syndrome occurs more frequently in the early morning, so beta-blockers or other rate-control drugs as well as nitrates and anti-arrhythmia drugs should be administered between 6 AM and 12 noon.6

The routine practice requires us to submit patients to cardiac surgery both during the morning and during the afternoon. After the study by Montaigne and colleagues,2 many patients and surgeons wondered whether it was better to wait until the afternoon to undergo or to perform a cardiac operation, especially a high-risk operation. The study by Nemeth and colleagues5 provides us with the opportunity to tell a patient that the outcome of his or her intervention depends on many factors, but certainly not on the time of day he or she enters the operating room.

References


From the aDepartment of Heart Disease, SS Annunziata Hospital, Chieti, Italy; and bDepartment of Cardiac Surgery, Pope John Paul II Foundation, Campobasso, Italy.

Disclosures: Authors have nothing to disclose with regard to commercial support. Received for publication Jan 8, 2020; accepted for publication Jan 13, 2020.

Address for reprints: Michele Di Mauro, MD, PhD, Department of Heart Disease, SS Annunziata Hospital, Via dei Vestini, 66100 Chieti, Italy (E-mail: mldimaro1973@gmail.com).

J Thorac Cardiovasc Surg 2020;
0022-5223/$36.00
Copyright © 2020 Published by Elsevier Inc. on behalf of The American Association for Thoracic Surgery
https://doi.org/10.1016/j.jtcvs.2020.01.047

CENTRAL MESSAGE
The outcome of our patients does not depend on the time of day of the operation.
Commentary: Cardiac surgery around the clock!
Michele Di Mauro, MD, PhD, Massimiliano Foschi, MD, Francesco Amendolara, MD, and Antonio M. Calafiore, MD, Chieti and Campobasso, Italy

The outcome of our patients does not depend on the time of day of the operation.