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LETTER TO EDITOR

Challenging Dilemma regarding Cardiac Advanced Life Support in Patients with Minimally Invasive Cardiac Surgery: A Letter to Editor

Mahmood Hosseinzadeh Maleki[1], Mohsen Yaghubi[2]*

1. Department of Cardiac Surgery, Imam Reza Hospital, Mashhad University of Medical Sciences, Mashhad, Iran
2. Department of Extra-Corporeal Circulation (ECC), Razavi Hospital, Imam Reza International University, Mashhad, Iran

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Dear editor:

Cardiac arrest in postoperative cardiac surgery patients is considered a perplexing event that needs a unique set of multidisciplinary management /strategies (1). Cardiac Advanced Life Support (CALS) differs from conventional Advanced Cardiac Life Support (ACLS) in utilizing targeted resuscitation protocols designed explicitly for post-cardiac surgery patients. The hallmark of CALS is the performance of prompt re-sternotomy and internal cardiac massage within 5 minutes of cardiac arrest if the patient is unresponsive to external chest compressions and rapid defibrillation (2).

There is no strong recommendation comparing internal to external massage. Also, some probable cardiac trauma may occur in both forms of cardiac massage (3). Furthermore, resuscitation techniques in CALS differ from conventional ACLS, such as performing three-stack defibrillation before cardiopulmonary resuscitation (CPR) initiation, employing epicardial or transcutaneous pacing (if applicable), and utilizing Veno-arterial extra-corporeal membrane oxygenation (VA-ECMO) when applicable (4).

Regardless of all that has been mentioned above, since the introduction of CALS, the field of cardiac surgery has kept progressing. Nowadays, the Cardiac Surgery Intensive Care Unit (CSICU) staff encounter a growing number of patients who receive cardiac surgeries using minimally invasive approaches like lateral thoracotomy or mini sternotomy, where performing an initial bedside sternotomy for cardiac massage is not feasible. On the other hand, the adoption of percutaneous techniques for valve surgeries is growing steadily. Also, permanent left ventricular assist devices (LVADs) are more frequently being implanted through sternal-sparing incisions, including lateral thoracotomy and hemisternotomy (5).

In the last CALS guidelines, there is no evidence regarding or practical approach to cardiac arrest in patients who have undergone minimally invasive cardiac surgery (MICS). Additionally, there is no evidence supporting best practices for external massage benefits in patients who underwent conventional cardiac surgery, such as those with sternotomy, compared to MICS. It is not pointless to know that the use of external chest compression modes in patients who underwent cardiac surgery have been debated due to adverse consequences (6-8). Although the declared that they had successfully managed a patient with cardiac arrest following MICS, they initiated the CALS with the external cardiac massage, and based on the sudden and unknown etiology of the cardiac arrest, the patient was transferred to the cardiac surgery operation room and underwent sternotomy. Internal massage was continued until spontaneous circulation returned. Whereas this patient underwent an MICS approach to ameliorate the post-cardiac surgery complication following sternotomy!

Now, if patients with MICS need CALS, what is the practical approach? Is ACLS best practice, or is another approach considered, given the nature of cardiac surgery?

1. Conclusions

Considering the diverse characteristics of patients in the cardiothoracic intensive care unit, staff, especially nurses, must quickly determine the best team-based approach. So, the current CALS guidelines require critical modification with the aim of achieving optimal resuscitation outcomes for patients who have undergone various cardiac surgeries.

2. Declarations

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None.

2.2. Author contributions

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***Corresponding Author:** Mohsen Yaghubi; Department of Extra-Corporeal Circulation (ECC), Razavi Hospital, Imam Reza International University, Mashhad, Iran. Email: n.m.yaghubi@gmail.com, Phone: +989367780472, ORCID: https://orcid.org/0000-0001-8061-3779.

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None.

2.4. Conflict of interest

None.

2.5. Ethical considerations

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2.6. Using artificial intelligence chatbots

All authors declare that they have not used any AI tools or technologies to prepare this manuscript.

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