

Extracorporeal cardiopulmonary resuscitation after pediatric cardiac surgery

To the Editor,

We genuinely appreciate Erek et al. (1) for their study. Extracorporeal cardiopulmonary resuscitation (ECPR) has become a widely used procedure in cardiac arrest situations. The authors should definitely admit this procedure if they use cardiac arrest after pediatric cardiac surgery, a highly catastrophic condition. We believe that their results are very successful considering that the rate of post-cardiopulmonary bypass without cardiac arrest after discharge from the hospital is 20%–45% (2-4). However, we want to comment on a different topic. We believe that some obvious complications could have developed because of cannulation sites utilized by the authors. Because the ascending aorta is placed in the outlet cannula, left ventricular failure can be triggered by increasing afterload. Heart failure after ECPR is almost inevitable because of systemic phenomena caused by heart failure due to cardiac arrest in patients in the study by Erek et al. (1). Our questions to Erek et al. (1) are focused on this stage. If the causes of cardiac arrest in patients can be determined, what is the rate of heart failure in these patients? Further, if heart failure occurs, does it affect survival after ECPR? We would be very grateful if the authors have any explanation for these questions.

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 at www.anatoljcardiol.com
 DOI:10.14744/AnatolJCardiol.2017.7715



Author's Reply

To the Editor,

We thank Dr. Gökalp et al. (1) entitled "Extracorporeal cardiopulmonary resuscitation for refractory cardiac arrest in children after cardiac surgery." published in *Anatol J Cardiol* 2017; 17: 328-33. We agree with their comment that increasing afterload caused by veno-arterial (V-A) ECMO may impact left ventricular (LV) function. Increased LV afterload, together with severe systolic dysfunction, may result in LV overload with subsequent increase in left atrial pressure and severe pulmonary edema (2). This is especially true for patients with biventricular physiology, intact atrial septum, and severe left ventricular dysfunction, such as that in dilated cardiomyopathy. Although the experiences of left atrial decompression during V-A ECMO in children are limited, Hacking et al. (3) have suggested that the elective decompression of the left ventricle reduces ECMO duration and increases survival. However, in their study, almost all patients had biventricular physiology, only half of whom had congenital heart disease. As our study included a small number of patients with biventricular physiology, no patient required left atrial decompression. However, after submitting our study, we experienced two patients requiring left atrial decompression. One of them was a 15-year-old boy with dilated cardiomyopathy, and the other was a 3-year-old boy with ventricular septal defect closure and subaortic resection. Both patients received ECPR, and the indication for left atrial decompression was unresolved pulmonary edema. Left atrial decompression was achieved with a second venous cannula inserted through the left atrial appendage, which was connected to the venous line with a "Y" adapter. Atrial septostomy and left ventricular cannulation are other alternatives for left heart decompression during ECMO support (2, 3).

We again thank Dr. Gökalp et al. (1) for giving us the opportunity to emphasize the importance of left heart decompression during V-A ECMO support.

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