Are mechanical assist devices life-saving in acute cardiogenic shock?
Mekanik destek cihazları akut kardiyojenik şokta hayat kurtarıcı mıdır?

İlker Mataracı, Muhammet Onur Hanedan, Ufuk Sayar, Mehmet Ali Yürük

Department of Cardiovascular Surgery, Ahi Evren Thoracic and Cardiovascular Surgery Training and Research Hospital, Trabzon, Turkey

Dear Editor,

We read the article with great interest by Orhan et al.[1] titled “Are mechanical assist devices life-saving in acute cardiogenic shock?” published in the Issue 3/2016 of the journal. However, we would like to address into some issues about the study results and share our comments and suggestions accordingly.

First, in the abstract section, the authors specified a patient population who were treated with long-term assist devices. However, as mentioned in the abstract section, the study results indicate short-term results of using mechanical assist devices. We would like the authors to comment on this issue to avoid any misunderstanding.

Second, in the article, the authors reported a survival rate of 28.5% in 14 patients (n=4) who underwent surgery. We believe that the route of the device insertion should be specified in survivors. In addition, the authors suggested that Centrimag was more appropriate in postcardiotomy patients in the Discussion section. We would like the authors to comment on this issue to avoid any misunderstanding.

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As the last resort, mechanical assist devices (MADs) are undoubtedly life-saving for patients with acute heart failure. There are many publications and experiences reported in the literature. As mentioned by the authors, the timing of device insertion is of vital importance. These devices are also known as parachute devices: similar to parachutes, these devices have a special mechanism to be automatically opened at a predesignated altitude. Therefore, in patients with difficulty in weaning from cardiopulmonary bypass (CPB) during postcardiotomy, timing and appropriate techniques for MAD implantation are critical. These patients should be also followed per protocol. Although there are several techniques, they pose some disadvantages such as being invasive and additional technical problems. Thus, additional pathologies should be considered in these patients. Currently, venoarterial (VA) extracorporeal membrane oxygenation (ECMO) is implanted using one of three techniques: peripheral, central, and hybrid. Peripheral VA ECMO cannulation is associated with peripheral ischemia and the arterial cannula which is inserted percutaneously is associated with distal limb ischemia-related problems. Therefore, an arterial cannula which supplies blood to the distal is used through distal perfusion cannulation. Despite all efforts, ischemic problems may arise and local or distal limb problems may be seen after cannulation following ECMO. In addition, impaired left heart functions of the peripherally implanted ECMO may increase the retrograde afterload. Ventricular dysfunction may also lead to Harlequin syndrome.[2] To overcome this problem, hybrid ECMO can be performed passing the ECMO cannula or axillary artery through a graft. In our VA ECMO practice, we routinely perform hybrid technique using the axillary arterial cannulation through the Chimney grafts. This technique is also superior as it allows follow-up of the extubated patient and weaning and decannulation under local anesthesia. We also would like the authors to comment on this issue.

In recent years, in patients with ECMO in whom decompression is unable to be achieved due to increased afterload and ventricular load, addition of the left atrial vent to the system is a reasonable alternative, as the authors performed in their study. In this technique,
there are applications in which ECMO and the Impella
system, an axial flow pump, is used together.[3] We also
would like the authors to comment on this issue and
share their experiences.

Finally, we found some inconsistent results in the
mortality rates in the Results section and the Tables.
For instance, the authors reported that two of four
patients with a MAD who were diagnosed with acute
myocarditis survived and these patients received long-
term left ventricular assist system, while myocardial
improvement was seen in another patient. In addition,
the cause of mortality was not stated in seven patients,
although two patients developed acute exacerbation
of chronic heart failure (n=8). We also would like the
authors to shed light into this inconsistency.

Yours sincerely,

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Author Reply
Dear Editor,
First, we would like to thank our colleagues for their
valuable comments and effort to improve the manuscript.
In the Abstract section, we mentioned that this study
was a retrospective study in which the patients who
received short-term ventricular assist system due to
acute cardiogenic shock and who were switched to
long-term ventricular assist system later. We realize
that we are unable to explicitly clarify the short- and
long-term assist systems which may lead to ambiguity.
In our manuscript, the term “short-term ventricular
assist systems” was used for ECMO and Centrimag.
Long-term ventricular assist systems referred to the
permanently implanted left ventricular assist devices.

The devices which we used are listed in Figure 2.
In a surviving patient with postpartum cardiomyopathy,
we used the Centrimag device. In this patient, left heart
failure was evident and we were able to extubate the
patient without complications and wean from the device
in the intensive care unit with recovery, compared to
those in whom we used ECMO for a longer period of
time.

Based on our experiences, we suggest that the
Centrimag device is more suitable in patients with left
ventricular insufficiency, as confirmed by intraoperative
transesophageal examination, without any additional
lung problem, due to the lack of membrane, with lower
inflammation and hematological complications, which
allows effective discharge in the left ventricle and gives
time for myocardial recovery and avoid end-organ
dysfunctions. Although ECMO can be used with axillary
cannulation in this patient population with cardiogenic
shock, it should be kept in mind that hematological
and inflammatory complications related to the ECMO
membrane are independent from the cannulation site. In
our practice, we routinely use the Centrimag device in
case of clinically isolated left ventricular insufficiency.

Furthermore, as summarized in Table 5, two of
four patients with acute myocarditis survived in our
study. One of the two survivors received long-term left
ventricular assist device, while myocardial recovery was
seen in the other patient. In addition, of the patients who
died due to acute exacerbation of chronic heart failure,
four died from multiorgan failure, two from infection-
related septic shock, and one from uncorrected bleeding
diathesis associated with hematological complications.

We hope that our comments would shed light into the
uncertain issues and give further insight.

Yours sincerely,

Correspondence: Evren Müge Taşdemir Mete, MD. Dr. Siyami Eisek
Göğüs Kalp ve Damar Cerrahisi Eğitim ve Araştırma Hastanesi, Kalp
ve Damar Cerrahisi Kliniği, 34668, Üsküdar, İstanbul, Turkey.
Tel: +90 216 - 542 44 44   e-mail: mugetasdemir@hotmail.com