







Pitfalls in extracorporeal cardiopulmonary resuscitation: a case report

 Aleksandar Blivajs*,
 Miroslav Raguž,
 Marin Pavlov,
 Ilko Vuksanović,
 Tomislava Bodrožić-
Džakić Poljak,
 Šime Manola

Dubrava University Hospital,
Zagreb, Croatia

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***ADDRESS FOR CORRESPONDENCE:** Aleksandar Blivajs, Klinička bolnica Dubrava, Av. G. Šuška 6, HR-10000 Zagreb, Croatia. / Phone: +385-98-1857-256 / E-mail: ablivajs@gmail.com

ORCID: Aleksandar Blivajs, <https://orcid.org/0000-0003-3404-3837> • Miroslav Raguž, <https://orcid.org/0000-0003-1567-8503>
Marin Pavlov, <https://orcid.org/0000-0003-3962-2774> • Ilko Vuksanović, <https://orcid.org/0000-0002-4462-8647>
Tomislava Bodrožić Džakić Poljak, <https://orcid.org/0000-0002-7293-3972> • Šime Manola, <https://orcid.org/0000-0001-6444-2674>

Introduction: Extracorporeal membrane oxygenation (ECMO) combined with cardiopulmonary resuscitation (CPR) is known as extracorporeal cardiopulmonary resuscitation (ECPR) and permits hemodynamic and respiratory stabilization of patients with cardiac arrest (CA) refractory to conventional CPR. Current evidence does not support the routine use of ECPR in all patients with refractory CA, and should be applied only in high-volume facilities.¹⁻³

Case report: 33-year-old patient was brought to the Emergency Department because of CA. Having lost consciousness 10 minutes prior to admission, he was complaining of chest pain and nausea. Advanced life support with intubation and mechanical ventilation was immediately begun, along with cardiopulmonary resuscitation (CPR) measures. Initial rhythm on ECG was ventricular fibrillation, and he was electrocardioverted on multiple occasions with temporary return of spontaneous circulation (ROSC). The patient was transferred to the Cardiac Intensive Care Unit under measures of CPR, and after 30 minutes of no ROSC, an on-site ECMO was primed with right arterial and left venous femoral cannulation. After implementation of temporary mechanical circulatory support he was rushed to the Cath-lab where angiography revealed occlusion of the proximal left anterior descending and percutaneous coronary intervention with one DES implantation was performed. The patient was sedated, on intermediate dose vasopressors (noradrenaline 0.2 mcg/kg/min), with ECMO support ranging around 3200 rpm. De-escalation from vasopressors and weaning from ECMO was initiated. Echo revealed a non-dilated left ventricle with mildly reduced ejection fraction due to hypokinesis of the septum and apex. After 24 hours, ECMO was successfully decannulated using percutaneous closure devices AngioSeal and ProGlide. Upon inspection 6 hours after decannulation, the right leg was pale with no palpable peripheral pulsations. Multi-slice computed tomography (MSCT) angiography revealed occlusion of the right AFC on closure site. Emergency thromboendarterectomy and „patch“ angioplasty of the common femoral artery (AFC) were performed. Follow-up MSCT angiography three hours later showed significant residual stenosis in the region of AFC and external iliac artery and subsequent percutaneous intervention was performed with implantation of one peripheral stent. The patient was later extubated with complete neurologic recovery and hemodynamic and rhythmic stability. He was discharged on his feet 11 days after hospitalization.

Conclusion: Despite high mortality rates in OHCA, we present a successful case where an experienced and trained team can perform effective and timely treatment of critically ill patients.

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LITERATURE

1. Inoue A, Hifumi T, Sakamoto T, Kuroda Y. Extracorporeal Cardiopulmonary Resuscitation for Out-of-Hospital Cardiac Arrest in Adult Patients. *J Am Heart Assoc.* 2020 Apr 7;9(7):e015291. <https://doi.org/10.1161/JAHA.119.015291>
2. Ouweneel DM, Schotborgh JV, Limpens J, Sjauw KD, Engström AE, Lagrand WK, Cherpanath TGV, Driessen AHG, de Mol BAJM, Henriques JPS. Extracorporeal life support during cardiac arrest and cardiogenic shock: a systematic review and meta-analysis. *Intensive Care Med.* 2016 Dec;42(12):1922-1934. <https://doi.org/10.1007/s00134-016-4536-8>
3. De Charrière A, Assouline B, Scheen M, Mentha N, Banfi C, Bendjelid K, Giraud R. ECMO in Cardiac Arrest: A Narrative Review of the Literature. *J Clin Med.* 2021 Feb 2;10(3):534. <https://doi.org/10.3390/jcm10030534>