Blood-loss minimizing removal technique of extracorporeal membrane oxygenation circuit in a patient unable to receive blood transfusions because of religious belief

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Topic(s):
Acute Heart Failure: Non-pharmacological Treatment

Citation:
Background: Extracorporeal membrane oxygenation (ECMO) has been widely used to maintain cardiac and/or pulmonary functions in patients with cardiopulmonary collapse. If the patient doesn’t accept the blood transfusion even at the risk of death due to any cause, medical team could not help taking up the challenging clinical situation for the patient.

Case: A 61-year-old male came to the emergency room (ER) complaining loss of consciousness and severe dyspnea. In social history, his religion is Jehovah’s witness. On arrival at ER, he developed a generalized seizure and cardiac arrest. The cardiac rhythm was recovered 3 minutes after CPR. However, hypoxia was not improved despite mechanical ventilation with high oxygen flow while his vital signs looked stable without any inotropic support. The level of hemoglobin (Hb) and hematocrit (Hct) was 15.8 mg/dL and 46.8% respectively. A chest computed tomography (CT) scan to evaluate the cause of sudden collapse revealed massive pulmonary thromboembolism. We decided to apply ECMO (Capiox EBS®, Terumo, Tokyo, Japan) for respiratory support. The guardian strongly refused any type of blood transfusion according to his religious belief. Emergency veno-venous (VV) type ECMO was applied. Simultaneously performed coronary angiography showed no significant lesion. At the 3 days of hospitalization, global oxygenation was improved with minimal support by ECMO and the level of Hb and Hct was decreased to 7.7mg/dL and 23.6%. We removed ECMO using blood loss minimizing technique during decannulation as follows; after first venous access cannula was clamped, total 600cc of saline was continuously and slowly infused to ECMO circuit till the whole circuit was fulfilled with saline. Then, return venous cannula was clamped and both cannulae were carefully removed at zero motor speed. The level of Hb and Hct was increased up to 9.2mg/dL and 30.0% respectively 2 days later. There is no significant hemodynamic change after ECMO removal.

Conclusion: Our blood loss minimizing ECMO removal technique with careful and continuous saline infusion into circuit would be greatly helpful in critical patients who cannot accept blood transfusion due to any reason.
Abstract: Blood-loss minimizing removal technique of extracorporeal membrane oxygenation circuit in a patient unable to receive blood transfusions because of religious belief. Authors: SM Park, MH Jung, MS Kim, HH Choi, KS Hong, H Lee. Hallym University, Chuncheon Sacred Heart Hospital - Chuncheon - Korea (Republic of), Gumi Cha Hospital, Cardiology - Gumi - Korea (Republic of).

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