Successful Long-term Extracorporeal Cardiopulmonary Membrane Oxygenation without Anti-Coagulation

Janissa Nair  
*Lehigh Valley Health Network*, Janissa.Nair@lvhn.org

Dorothea T. Watson DO  
*Lehigh Valley Health Network*, Dorothea_T.Watson@lvhn.org

Rita Pechulis MD, FCCP  
*Lehigh Valley Health Network*, Rita_M.Pechulis@lvhn.org

Nicholas M. Rini PA-C  
*Lehigh Valley Health Network*, Nicholas_M.Rini@lvhn.org

Tim S. Misselbeck MD  
*Lehigh Valley Health Network*, Timothy_S.Misselbeck@lvhn.org

See next page for additional authors

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Authors
Janissa Nair; Dorothea T. Watson DO; Rita Pechulis MD, FCCP; Nicholas M. Rini PA-C; Tim S. Misselbeck MD; Kenneth Miller RRT; and James K. Wu MD

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Successful Long-term Extracorporeal Cardiopulmonary Membrane Oxygenation without Anti-Coagulation

Janissa Nair¹, Dorothea Watson, DO², Rita Pechulis, MD², Nicholas Rini, PA-C¹, Tim Misselbeck, MD¹, Kenneth Miller, RRT³, James Wu, MD¹

¹Division of Cardiothoracic Surgery, Department of Surgery, ²Division of Critical Care Medicine, Department of Medicine, ³Respiratory Care Department, Lehigh Valley Health Network, Allentown, Pennsylvania

Background
Extracorporeal cardiopulmonary membrane oxygenation (ECMO) is a technique becoming more prevalent in critical care situations for refractory Acute Respiratory Distress Syndrome (ARDS). One of the major complications of ECMO is bleeding due to required anticoagulation. We present a case of a 47-year-old male (H1N1) who had significant bleeding complications during ECMO, and anticoagulation was discontinued over a total of 25 days. The patient had a successful recovery.

Pertinent Hospital Events
The patient had severe epistaxis and GI bleeding during the first ECMO run. The heparin was discontinued for 7 days up to the time of decannulation. The patient again developed exacerbation of ARDS requiring ECMO support. This time, anticoagulation was not used for the entire second ECMO run for 18 days. The Avalon dual lumen cannula was free of thrombus upon examination after decannulation each time. The patient did not have any thrombotic or embolic events and has recovered from ARDS.

Timeline of Patient’s Hospital Course

<table>
<thead>
<tr>
<th>Date</th>
<th>Symptoms</th>
<th>Procedure</th>
<th>Heparin/off-Anticoagulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 5</td>
<td>H1N1, ARDS, vent-dependent respiratory failure, refractory hypoxemia</td>
<td>Initiate veno-venous RIJ ECMO</td>
<td>Yes</td>
</tr>
<tr>
<td>February 12</td>
<td>Severe epistaxis, upper GI bleeds</td>
<td>Bilateral posterior nasal packing, right maxillary artery embolization</td>
<td>Discontinued</td>
</tr>
<tr>
<td>February 20</td>
<td>None</td>
<td>De-cannulation of veno-venous ECMO</td>
<td>None/off heparin for 7 days</td>
</tr>
<tr>
<td>March 3</td>
<td>Acute decompensation of ARDS</td>
<td>Re-initiate RIJ veno-venous ECMO</td>
<td>None</td>
</tr>
<tr>
<td>March 21</td>
<td>None</td>
<td>De-cannulation of veno-venous ECMO, discharged to rehab</td>
<td>None/off heparin for 18 days</td>
</tr>
</tbody>
</table>

Conclusion
• This case review shows that a moderately long-term veno-venous ECMO can be successful without administering an anti-coagulant.
• In addition, a second ECMO run during the same admission is also feasible.