QMJ
A peer reviewed journal
QATAR MEDICAL JOURNAL

4th Annual ELSO-SWAC Conference Proceedings

Veno-venous extracorporeal membrane oxygenation in a child with streptococcal toxic shock syndrome

Tejas Mehta, Myra Batool

Address for Correspondence:
Tejas Mehta
Hamad Medical Corporation, Hamad General Hospital, Pediatric Intensive Care Unit, PO Box 3050, Doha, Qatar
Email: tmehta@hamad.qa

http://dx.doi.org/10.5339/qmj.2017.swacelso.67

Cite this article as: Mehta T, Batool M. Veno-venous extracorporeal membrane oxygenation in a child with streptococcal toxic shock syndrome, Qatar Medical Journal, 4th Annual ELSO-SWAC Conference Proceedings 2017:67 http://dx.doi.org/10.5339/qmj.2017.swacelso.67

QSCIENCE.com
An Initiative of Qatar Foundation

Background: Streptococcal toxic shock syndrome (STSS) is a life-threatening illness associated with invasive or non-invasive group A streptococcal (GAS) infection with rapid progression and a high mortality rate.[1] There are limited data on the use of extracorporeal membrane oxygenation (ECMO) in toxic shock syndrome (TSS) with few case reports in adults with TSS-induced cardiac dysfunction[2,3] and a pediatric series of severe group A streptococcal infections from Australia.[1] The mode of ECMO was veno-arterial (VA) in all these case reports due to significant myocardial failure. According to our knowledge, we present the first reported case of STSS in a child managed with veno-venous (VV) ECMO.

Methods: Clinical presentation, investigations, management, and outcome of the child was followed from the health records. The study was exempt from ethical approval. Detailed search of the published medical articles did not reveal similar publication.

Results: A 13-month-old, previously healthy child presented in a state of shock 3 days after sustaining a burn wound to the dorsum of the left hand. Blood and wound cultures were positive for *Streptococcus pyogenes*, and there were signs of multiorgan failure, satisfying the Center for Disease Control (CDC) criteria for STSS. Acute respiratory distress syndrome (ARDS) developed on day 2 of presentation, accompanied by hemodynamic instability requiring support with multiple inotropes with a modified inotropic score of 117.5. Echocardiography revealed a structurally normal heart with ejection fraction of 40%. Hemodynamics were found to be associated with blood oxygen saturation. Blood pressure increased on increasing SpO_2 with no change in the inotropic support. VV ECMO was initiated when the

oxygenation index reached 68 in spite of being on inotropes. Inotropic support was weaned and stopped after 12 h. The child remained on ECMO for 7 days before being successfully decannulated.
Conclusions: As the underlying cause of STSS is frequently treatable, ECMO may be considered early in the management of these cases when conservative measures fail. Presence of inotropic support should not be considered as a contraindication for VV ECMO in pediatric STSS.[4,5]

Keywords: STSS, VV ECMO, modified inotropic score, oxygenation index

REFERENCES

1. Lithgow A, Duke T, Steer A, Smeesters P. Severe group A streptococcal infections in a paediatric intensive care unit. *J Paediatr Child Health*. 2014;50(9):687 – 692.
2. Imaeda T, Nakada T, Abe R, Tateishi Y, Oda S. Veno-arterial extracorporeal membrane oxygenation for Streptococcus pyogenes toxic shock syndrome in pregnancy. *J Artif Organs*. 2016;19(2):200 – 203.
3. Gabel E, Gudzenko V, Cruz D, Ardehali A, Fink M. Successful use of extracorporeal membrane oxygenation in an adult patient with toxic shock-induced heart failure. *J Intensive Care Med*. 2013;30(2):115 – 118.
4. Roberts N, Westrope C, Pooboni S, Mulla H, Peek G, Sosnowski A, Firmin RK. Venovenous extracorporeal membrane oxygenation for respiratory failure in inotrope dependent neonates. *ASAIO J*. 2003;49(5):568 – 571.
5. Skinner S, Iocono J, Ballard H, Turner M, Ward A, Davenport D, Paden ML, Zwischenberger JB. Improved survival in venovenous vs venoarterial extracorporeal membrane oxygenation for pediatric noncardiac sepsis patients: a study of the Extracorporeal Life Support Organization registry. *J Pediatr Surg*. 2012;47(1):63 – 67.