

UC Davis Pediatrics

Title

Short-term Outcomes of Therapeutic Hypothermia through Veno-Arterial Extra Corporeal Membrane Oxygenation for HIE and Severe PPHN

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The data associated with this publication are not available for this reason: N/A

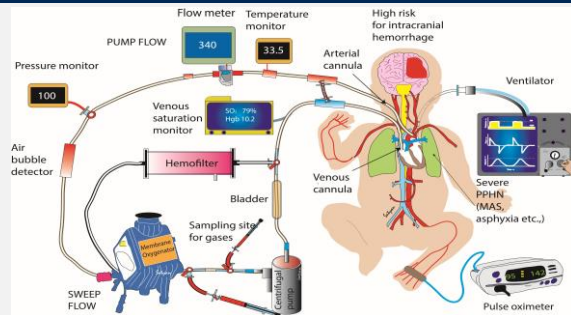
Introduction

- Therapeutic hypothermia (TH) is currently the standard care for neonates with moderate to severe hypoxic ischemic encephalopathy (HIE)^{2,3}.
- Some studies have reported increased intracranial hemorrhagic (ICH) complications during TH and ECMO for HIE⁴.
- Data regarding the safety of veno-arterial extracorporeal membrane oxygenation (VA-ECMO) among HIE infants requiring TH is unclear.

Objective

- To evaluate in-hospital health outcomes of infants with HIE and severe persistent pulmonary hypertension of the newborn (PPHN) requiring TH and VA-ECMO.

Materials & Methods



Materials & Methods (continued)

- Infants included between 2011-2019 managed with TH for HIE and required VA ECMO for PPHN and/or cardiac dysfunction.
- Vasoactive-Inotropic Score was used to quantify the amount of cardiovascular support.
- Coagulation profile and blood products transfused as required.
- All images were evaluated, and severity of injury was classified by a single radiologist blinded to the clinical course using criteria (Reference 1).
- PPHN described as presence of any of the following – a. Flat Interventricular septum b. Presence of bidirectional or Rt to Lt shunt on Echo c. Increased Right ventricular systolic pressure as determined by TR jet.

Results

Infant characteristics	ECMO infants (n-9)	Non ECMO (n-16)
Gestational age weeks	40 (39.3 - 40.3)	39 (38 - 40)
Male gender	3 (33.3%)	7 (43.7%)
Birth weight	3480 (2820 – 3760)	3508 (3125 – 4040)
5-minute Apgar score ≤ 5	7 (77.7%)	12 (75%)
Seizures	2 (22.2%)	4 (25%)
Age starting INO (h)	4 (3-6)	7 (5.5-14.25)
Echocardiographic evidence of		
- PPHN	9 (100%)	16 (100%)
- Ventricular dysfunction	3 (33%)	2 (12.5%)
Highest Vasoactive Inotrope Score	22 (15-55)	10 (7.5-26.2)
Duration of Mechanical Ventilation (d)	15 (13-18)	6 (4-8.5)
Abnormal MRI	4 (44%)	
Death	0	4 (25%)***
Length of stay	36 (30-59)	20 (15.5-26)

Results (continued)

- 0% of deaths in infants receiving VA ECMO ; 25% (4) deaths in the Non-ECMO (control group).
- No significant ICH developed in VA ECMO.
- 77% infants were cooled during ECMO.

Conclusion

- All patients receiving VA ECMO were discharged home with acceptable neurological outcome.
- Additional studies are needed to further support and evaluate VA ECMO as a safe and effective treatment modality.

References

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