

# Successful administration of venovenous extracorporeal membrane oxygenation through the modified Blalock–Taussig operation in an infant with graft dysfunction after the Norwood procedure

Megumi Kanao-Kanda  
Takayuki Kunisawa  
Kunihiko Yamamoto  
Hirotsugu Kanda  
Hiroshi Iwasaki

Department of Anesthesiology and  
Critical Care Medicine, Asahikawa  
Medical University, Asahikawa,  
Hokkaido, Japan

## Dear editor

Insufficient pulmonary blood flow through a right ventricle-to-pulmonary artery conduit following the Norwood procedure is remediable by adding a modified Blalock–Taussig shunt (MBTS).<sup>1</sup> First, however, perioperative hypoxemia must be managed. Venovenous extracorporeal membrane oxygenation (VV-ECMO) is likely to be a useful method for respiratory support in such cases.<sup>2,3</sup> We present the case of a 2-month-old patient with graft dysfunction after the Norwood procedure who underwent MBTS with VV-ECMO support.

## Case report

Due to graft dysfunction after the Norwood operation, a 2-month-old female infant (height 49 cm, weight 3.1 kg) was scheduled for an emergency right MBTS. VV-ECMO was also planned to avoid the risk of perioperative hypoxemia. After anesthetic induction, an 8 Fr bicaval dual-lumen catheter (GamCath® pediatric catheter; Gambro, Lund, Sweden) was placed in the right internal jugular vein under ultrasound guidance and VV-ECMO was implemented.<sup>4,5</sup> Transesophageal echocardiography was used to evaluate the ventricular function and volume status, along with the hemodynamics. Upon initiation of VV-ECMO, the drainage flow volume temporarily decreased. A volume challenge was immediately performed with 5% albumin to achieve an appropriate preload. The hemodynamic responses were monitored by transesophageal echocardiography.<sup>6</sup> The VV-ECMO circuit became stable after the volume load. The VV-ECMO flow rate was maintained at 150 mL/min, with the rotor at 3000 rpm. During right pulmonary artery clamping, the oxygen saturation improved to approximately 90%, with a pO<sub>2</sub> of 313 mmHg on a FiO<sub>2</sub> of 1. The MBTS was successfully performed. Subsequent VV-ECMO weaning was uneventful. VV-ECMO was finally withdrawn due to persistent stability of the patient's hemodynamic status.

## Conclusion

VV-ECMO is an effective management strategy not only for adults but also for infants with refractory cardiorespiratory failure. Based on our experience with this patient,

Correspondence: Megumi Kanao-Kanda  
Department of Anesthesiology and  
Critical Care Medicine, Asahikawa  
Medical University, Midorigaoka-higashi  
2-1-1-1, Asahikawa, Hokkaido,  
078-8510, Japan  
Tel +81 166 68 2583  
Fax +81 166 68 2589  
Email megumikanao618@yahoo.co.jp

VV-ECMO provides useful respiratory support to avoid hypoxemia during MBTS operation in infants with graft dysfunction after the Norwood procedure.

## Disclosure

The authors report no conflicts of interest in this work.

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