Extracorporeal Membrane Oxygenation as Rescue Therapy After Pulmonary Thromboendarterectomy: Two Contrasting Cases

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Background: Pulmonary thromboendarterectomy (PTE) is the treatment of choice for chronic thromboembolic pulmonary hypertension (CTEPH). Although outcomes are excellent in experienced centers, severe postoperative complications such as massive pulmonary hemorrhage, reperfusion lung injury, and right ventricular (RV) failure may require extracorporeal membrane oxygenation (ECMO). We report two contrasting cases illustrating different ECMO strategies after PTE. Cases: A 48-year-old man with CTEPH underwent bilateral PTE and developed massive endobronchial hemorrhage from the left lower lobe while being weaned from cardiopulmonary bypass. Bronchoscopic management with endobronchial blockade failed to control the bleeding. Central venoarterial (VA) ECMO was immediately established to provide RV support while diverting pulmonary blood flow, allowing effective hemorrhage control. Twenty-four hours later, surgical re-exploration confirmed complete hemostasis, and ECMO was converted to a peripheral VA configuration using femoral venous drainage and right axillary arterial cannulation. Despite bleeding control, the patient developed acute kidney injury requiring renal replacement therapy, refractory gastrointestinal bleeding, and persistent severe RV dysfunction without recovery. Because of irreversible multiorgan dysfunction and poor functional status, lung transplantation was not considered feasible.

CON EL RESPALDO

Following multidisciplinary discussion and family agreement, life-sustaining therapies were withdrawn, and the patient died. A 63-year-old man with CTEPH underwent bilateral PTE and developed severe refractory hypoxemia due to reperfusion lung injury despite optimized mechanical ventilation and inhaled nitric oxide. Rescue venovenous (VV) ECMO was initiated for respiratory support, while inotropic therapy was used to optimize RV function. Progressive pulmonary recovery allowed extubation while on ECMO, followed by successful decannulation. The patient was discharged home with complete respiratory and functional recovery. Conclusions: ECMO is an essential rescue therapy for different life-threatening complications following PTE. Central VA ECMO can simultaneously support the failing RV and reduce pulmonary blood flow, facilitating control of catastrophic endobronchial hemorrhage when conventional measures fail. In contrast, VV ECMO effectively supports isolated severe reperfusion lung injury. These cases demonstrate that ECMO configuration should be tailored to the underlying pathophysiology, with outcomes primarily determined by the reversibility of the primary complication and recovery of RV function.

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