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From shock to rehabilitation

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Introduction: Combined cardiogenic and septic shock complicated by severe acute respiratory distress syndrome (ARDS) is a life-threatening condition requiring complex multidisciplinary management. ARDS is characterized by diffuse alveolar epithelial and endothelial injury, increased pulmonary vascular permeability, and impaired gas exchange.[1] Treatment includes mechanical ventilation, hemodynamic support, vasoactive therapy, and appropriate antimicrobial treatment. Temporary mechanical circulatory support may be considered in selected patients with severe cardiac dysfunction and refractory circulatory failure.[2]

Case report: A previously healthy 30-year-old female patient was admitted to the Cardiac Intensive Care Unit with combined septic and cardiogenic shock complicated by severe ARDS. The patient had presented to another hospital the previous day with nausea, right-sided chest pain, dyspnea, hemoptysis, and fever. Imaging revealed necrotizing pneumonia with right-sided hemothorax and pneumothorax. Microbiological testing confirmed *Pseudomonas aeruginosa* infection, and early pregnancy was also confirmed. On admission, the patient was profoundly hemodynamically unstable, with severe respiratory failure requiring intubation, mechanical ventilation, and four vasoactive agents. Inflammatory markers were markedly elevated. Venoarterial extracorporeal membrane oxygenation (VA-ECMO) was initiated due to refractory shock. Persistent respiratory failure during VA-ECMO support necessitated the addition of a venous return limb, resulting in conversion to a hybrid venoarteriovenous ECMO (VAV-ECMO) configuration. Following improvement in cardiac function, the patient was transitioned to venovenous ECMO (VV-ECMO) for continued respiratory support. During the prolonged intensive care stay, a tracheostomy was performed. Extensive necrotizing pneumonia necessitated surgical resection of the right lung, followed by frequent airway suctioning and clearance of respiratory secretions. To facilitate ongoing respiratory support, early mobilization, and pulmonary rehabilitation, a dual-lumen cannula was inserted via the right internal jugular vein. As the patient's clinical condition improved, ECMO support and mechanical ventilation were successfully discontinued. The clinical course was further complicated by right lower-limb oedema, severe muscle weakness, and sensory impairment. Electroneuromyography findings suggested critical illness myopathy. Following 72 days in the intensive care unit, the patient was transferred to a specialized rehabilitation facility for continued recovery and functional rehabilitation.

Conclusion: This case highlights the importance of continuous hemodynamic and respiratory monitoring, timely recognition of complications, and individualized care in patients requiring complex ECMO support. Transitions between VA, VAV, and VV-ECMO configurations require close multidisciplinary collaboration and specialized nursing competencies. Early recognition of clinical changes, prevention of complications, and coordinated nursing interventions are essential for patient safety, successful weaning from ECMO, and recovery following prolonged intensive care treatment.

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