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Letter to the Editor

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"Outliving the Scan"- A Case of Favourable Recovery Despite Extensive Cerebral Micro Bleeds in ECMO

Dr Ganesh K M*, Chandan G S, Padmakumar A V, Dr Pooja P S

To the Editor

Peripartum cardiomyopathy (PPCM) is a form of left ventricular systolic dysfunction diagnosed after exclusion of other identifiable causes and typically presents towards the end of pregnancy or within 5 months postpartum [1]. Rarely PPCM may be complicated by cardiopulmonary arrest, necessitating mechanical circulatory support during resuscitation of in the post cardiac arrest period. We describe a rare case of PPCM , requiring veno-arterial extracorporeal membrane oxygenation (VA-ECMO) support , complicated by diffuse cerebral micriobleeds, who initially remained comatose, yet ultimately achieved complete neurological recovery six months after intensive care unit (ICU) discharge. A 28-year-old woman , two months postpartum following a full term normal vaginal delivery, developed progressive pedal edema and dyspnea. She was diagnosed with peri-partum cardiomyopathy based on echocardiographic findings of dilated cardiac chambers with biventricular failure (left ventricular ejection function 20% , tricuspid annular plane excursion of 10mm). She was admitted to a teaching hospital for the management of decompensated heart failure. During hospitalisation, she developed generalised tonic-clonic seizures, followed pulseless ventricular tachycardia progressing to asystole. High quality cardiopulmonary resuscitation (CPR) was initiated, a definitive airway was secured and return of spontaneous circulation (ROSC) was achieved after eight cycles of CPR and four blouses of adrenaline. The total duration of CPR was 16 mins. In the post-cardiac arrest period, the patient required high dose vasopressor support and was referred to our centre for advanced mechanical circulatory support. On arrival, lung protective ventilation strategies were continued, and VA-ECMO was initiated via right femoral-femoral cannulation with placement of a distal perfusion cannula. Due to severe metabolic acidosis, sustained low efficiency daily dialysis (SLEDD) was commenced. Additional supportive measures included neuro-protective strategies, guideline directed heart failure therapy and bromocriptine for PPCM. A tracheostomy was performed on day 7 of ECMO support , and the patient was successfully weaned from VA-ECMO on day 10. The ECMO course was was uneventful. Following cessation of sedation, her Glasgow coma scale score remained E1VTM1. Magnetic resonance imaging (MRI) of the brain demonstrated diffuse cerebral micro bleeds on suspectibilty weighted images (SWI). Figure 1 and 2. One week after ECMO decannulation , the patient began opening eyes to painful stimuli, although motor responses remained poor. Dialysis support was discontinued two weeks after ECMO weaning. She tolerated ventilator weaning trials and was liberated mechanical ventilation three weeks after ECMO initiation. Neurological recovery was gradual but progressive. By four weeks post-ECMO she started to obey simple commands. She was discharged six weeks after ECMO decannulation with limited physical activity. At 20 weeks post ECMO , she had regained independence in activities of daily living. At two year follow up, confirmed via telephone communication, she was leading a normal life without neurological deficits. Neurological injury has been reported in approximately 50% of patients receiving ECMO support.

Affiliation:
Department of Medical Intensive Care Unit, Fortis Hospital Bannerghatta Road, Bengaluru, Karnataka India

***Corresponding author:**
Ganesh K M, Consultant Intensivist, Fortis Hospital Bannerghatta Road, Bengaluru Karnataka India

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Described complications include intracranial haemorrhage, acute ischemic infracts, hypoxic ischemic brain injury and brain death [2]. Cerebral microbleeds have also been described in patients on ECMO and are associated with poor survival or significant long term neurological impairment [3,4].In contrast our patient demonstrated a meaningful neurological recovery despite an initial prolonged comatose state. Cerebral micro bleeds are thought to arise from arteriolopathy (small vessel disease or amyloid disease) or secondary to embolic phenomena (septic or fat). Our patient did not experience any bone fractures neither did she have any evidence of infective endocarditis. It is established that pregnancy and post partum period are pro-inflammatory in nature and this could have lead to the microcirculatory dysfunction and potentially lead to microhemorrhages in a vulnerable patient [4,5]. In patients with history of cardiac arrest, prolonged low flow states and diffuse cerebral micro bleeds on neuroimaging, a poor neurological prognosis is often anticipated. However, in the absence of classical hypoxic-ischemic injury or cerebral infraction on MRI , clinicians should be aware of this rare ECMO associated neurological complication and be encouraged to continue aggressive supportive care rather than early prognostication with regards to poor neurological outcome. To the best of our knowledge this represents only the second reported case of VA-ECMO associated diffuse cerebral micro bleed with a favourable long term neurological outcome.

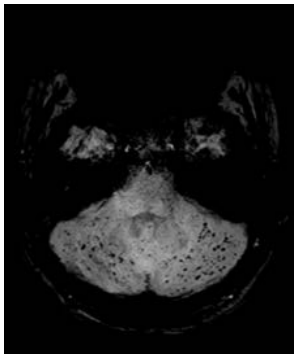

Figure (1)

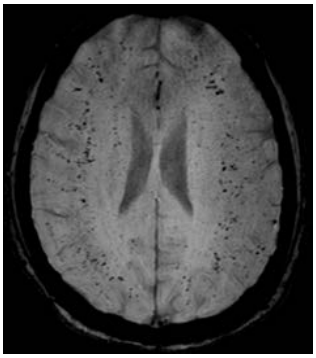

Figure (2)

(Figure 1 and 2): MRI - SWI showing diffuse cerebral micro bleeds.

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