V-A ECMO support in a case of GIANT CELL MYOCARDITIS.

Dr. Tomas Hitka, Dr. Alvin Teo, Prof. Alistair Nichol
The Alfred Hospital, Melbourne, Australia.

ABSTRACT:
We report a case of previously healthy 48 year old female who developed severe global cardiac failure (LVEF 10%) following 8 weeks of influenza like illness. Cardiac biopsy confirmed diagnosis of giant cell myocarditis which is a rare condition manifesting with congestive heart failure and malignant ventricular arrhythmias. The patient rapidly deteriorated despite aggressive medical therapy. Peripherally inserted veno-arterial ECMO was instituted by intensivists at a bed side to provide cardiovascular support allowing time for immunosuppressive therapy (methylprednisolone, ATGAM, cyclosporine A). There were no bleeding or thrombotic complications. V-A ECMO supported the failing heart, prevented hypoperfusion complications of the myocarditis and allowed extubation at 24 hours of treatment. The patient was decannulated at day 10 and subsequently discharged home within 21 days of ECMO initiation with LVEF 41%. At 6 months, the LV and RV systolic function was normal. This case will highlight presentation of this rare disorder, the place of ECMO support, the challenge/benefit of extubation on ECMO and potential complications (pulmonary oedema) on V-A ECMO.

Case: Present complaint: 48 year old female presented with increasing shortness of breath on exertion, orthopnoea, sharp chest pain, palpitations and abdominal discomfort following 8 weeks of influenza like illness. Past medical history: Nil significant Clinical examination: Pale, diaphoretic with fine bibasal creps on auscultation. HR 130/min, BP 93/65, SpO2 99% pH 7.51, pCO2 2.26 kPa, pO2 12.23 kPa, BE -7, HCO3 13, SaO2 97% in a fast AF 160-170/min, BPs 90 mmHg, Renal: Anuric for the last hour, Urea 9.5, Creatinine 86 LFT: Bi 6, ALT 697, 788 738 566 490 184 31 GGT 209, ALP 201 Lactate 10.1

ABG: on FiO2 0.65 pH 7.51, pCO2 2.26 kPa, pO2 12.23 kPa, BE -7, HCO3 13, SaO2 97%

Lactate 10.1

LFT: Bi 6, ALT 697, 788 738 566 490 184 31 GGT 209, ALP 201

Biopsy result: Giant cell myocarditis

ECMO
ECMO settings:
- blood flow 3.6 l/min, fresh gas flow 4 l/min,
- FIO2 1, APTT 45-55s.

Initiation of ECMO prevented end organ damage due to hypoperfusion. Dobutamine and frusemide infusions were ceased while adrenaline and noradrenaline were slowly weaned. Short description: GIANT CELL MYOCARDITIS.

Therapy: Methylprednisolone, Cyclosporine A (T cell inhibition), ATGAM (a lymphocyte selective immunosuppressant, primarily monomeric IgG from hyperimmune horse serum immunised with human thymus lymphocytes).

Recovery: The recovery after extubation was complicated by development of pulmonary oedema, intermittent loss of pulsatility and low urinary output while on V-A ECMO. We initiated NIV, increased blood flow on ECMO to 4 l/min and started adrenaline, milrinon, GTN, and frusemide infusions. The patient responded well. TTE on day 6 showed significant improvement in heart function which led to successful decannulation on day 10 following weaning studies. TTE on day 13 showed further improvement. A single chamber AICD was implanted before discharge home on day 21.

At 6 months still on immunosuppressive therapy, the patient was NYHA I. TTE showing normal LV and RV systolic function.

Conclusions: GCM is a rare and deadly autoimmune disease which can result in a profound cardiac failure. Peripheral V-A ECMO can be used as a bridge to heart recovery allowing time for immunosuppressants to work while preventing multiorgan failure due to cardiogenic shock.

Bibliography: