



Hemodynamic and clinical predictors of successful weaning from VA-ECMO



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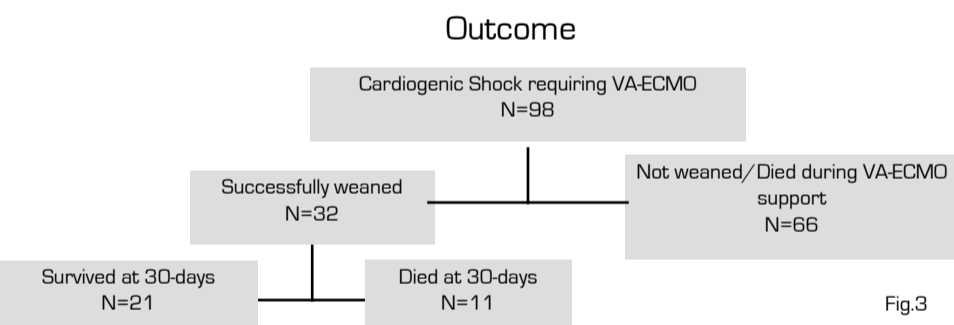
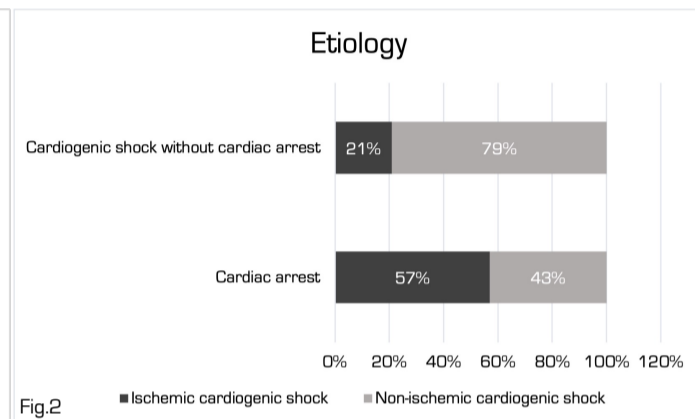
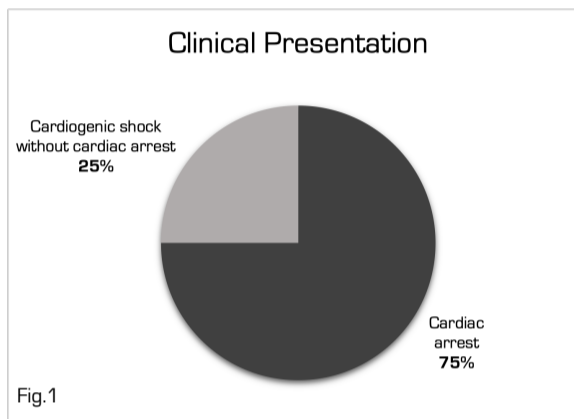
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INTRODUCTION Successful weaning from VA ECMO is defined as device removal without further requirement for re-cannulation over the following 30 days. Few data exist concerning hemodynamic parameters and pharmacological treatment in the first 24 hours since VA-ECMO implantation.

PURPOSE We evaluated hemodynamic predictors of VA-ECMO weaning within the first 24 hours since VA-ECMO institution.

METHODS Single-center-observational study of patients with CS undertaking VA-ECMO from 2013 to 2020. Primary endpoint was successful weaning from VA ECMO. Clinical, hemodynamic, and management data were collected.

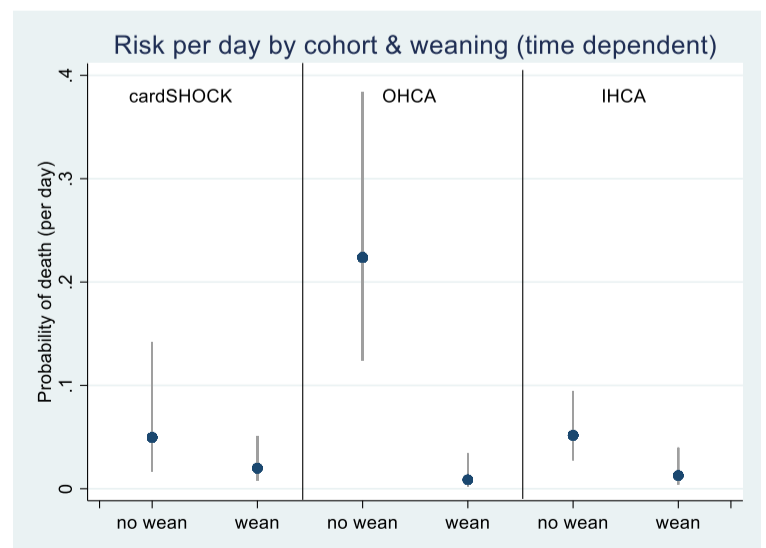
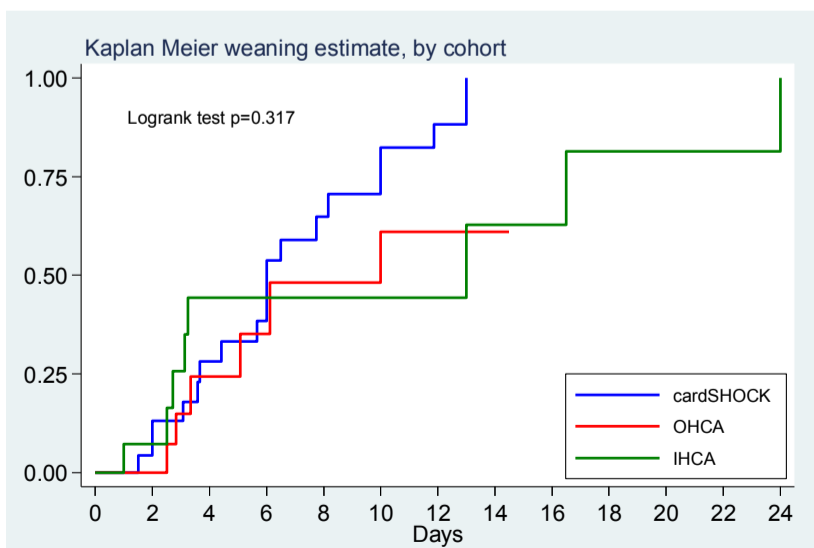
RESULTS 98 patients [24% female; 53,3±11,6 y.o.] were enrolled. Etiologies and clinical presentation are shown in Figure 1-2. 33% of patients were successfully weaned at 129,0 [72,5-207,0] hours; 30-days mortality was 79%. 19% cardiac arrest (CA) patients were successfully weaned. Differences between weaned and not weaned patients are shown in table 1: patients weaned from VA-ECMO had higher mean blood pressure, lower serum lactate, and lower Sequential Organ Failure Assessment (SOFA) score.



	Weaned N=32	Not weaned N=66	p value
Heart rate, bpm	93.8±24.2	85.3±27.8	0.149
Systolic blood pressure, mmHg	99.7±22.2	79.5±24.5	0.001*
Diastolic blood pressure, mmHg	63.3±17.8	52.2±16.8	0.010*
Mean blood pressure, mmHg	75.4±18.1	60.1±17.9	0.000*
Pulsatile pressure, mmHg	36.3±14.7	27.3±19.2	0.028*
pH	7.207±0.189	7.110±0.208	0.024*
Lactate, mmol/L	8.4±5.3	11.3±4.9	0.012*
SOFA score	11.6±2.8	13.0±3.4	0.036*

Table 1

According to the logrank test performed, parameters associated with successful weaning from VA-ECMO were systolic blood pressure >105 mmHg (HR 2,46, 95% CI 1,11-5,48; p=0,027), mean blood pressure >75 mmHg (HR 1,51, 95% CI 0,72-3,13; p=0,275), pulsatile pressure >40 mmHg (HR 1,84, 95% CI 0,83-4,10; p=0,138) and serum lactate >4 mmol/L (HR 0,57, 95% CI 0,27-1,23). Cardiac arrest showed a negative association with VA-ECMO weaning (HR OHCA 0,52, 95% CI 0,21-1,32, HR IHCA 0,66, 95% CI 0,25-1,73; p=0,317) and a negative effect on mortality in association with weaning failure.



CONCLUSIONS Patients with CA are burdened by worsen outcome: this finding is in accordance with literature and recent classification of CS indicating CA as prognostic modifier. Other haemodynamic parameters associated with successful weaning from VA-ECMO are those related to organ perfusion.

REFERENCES (1) Sawada, K. et al. Predicting Parameters for Successful Weaning from Veno-Arterial Extracorporeal Membrane Oxygenation in Cardiogenic Shock. (2) Cusanno, A. et al. Predictors of weaning failure in case of VA ECMO implantation. (3) Aissaoui, N. et al. Predictors of successful extracorporeal membrane oxygenation (ECMO) weaning after assistance for refractory cardiogenic shock. (4) Gaies, MG. et al. Vasoactive-inotropic score as a predictor of morbidity and mortality in infants after cardiopulmonary bypass.