

Successful employment of VA ECMO and blood purification in cardiogenic/septic shock: a 2 cases series

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Introduction

Sepsis in patients with a reduced cardio-circulatory reserve may precipitate a particular phenotype of shock, marked as cardiogenic/septic shock, characterized by systemic pressure collapse, sharp lactate increments, and deep central venous desaturation. VA ECMO and blood purification could be potentially life-saving in such a clinical scenery.

Methods

Two male patients, 59 and 75 years old, with a reduced LVEF due to ischemic heart disease, underwent surgical cardiac revascularization. The emergence of a sepsis complicated the postoperative course, causing an arterial hypotension unresponsive to catecholamines and a microcirculatory failure, in spite of a normal cardiac index (CI). In front of a DO₂-dependant cardiogenic/septic shock, in both cases, a peripheral VA-ECMO was established to increase CI and oxygen availability (DO₂I), while a CVVHDF was started to replace renal function. A CytoSorb cartridge was used in both cases to prevent end-organ damage mediated by cytokine, and restore peripheral vasomotor responsiveness. In one patient an eight hours run with oxYris, a filter able to absorb the endotoxin, was delivered before CytoSorb implementation. An IABP was also inserted to ensure a LV unloading and an empirical antibiotic therapy was commenced. In both cases blood culture became positive to Gram+ agents.

Results

The prompt institution of a VA-ECMO increased the CO, restored the oxyphoric indices, and, together with cytokine hemoabsorption, stabilized the MAP, promoted a fast clearance of serum lactates and a fast weaning from catecholamine, and ensured end-organs protection, (Fig 1).

Conclusion

In literature, the patients with LV dysfunction and sepsis who died had a significantly lower ScvO₂ than survivors: therefore, management strategies targeting DO₂ variables (such as VA-ECMO) may be strongly indicated to treat the threatening dysoxia. The combined use of VA-ECMO and blood purification therapies demonstrated potential benefit as a bridge to recovery in cardiogenic/septic shock.

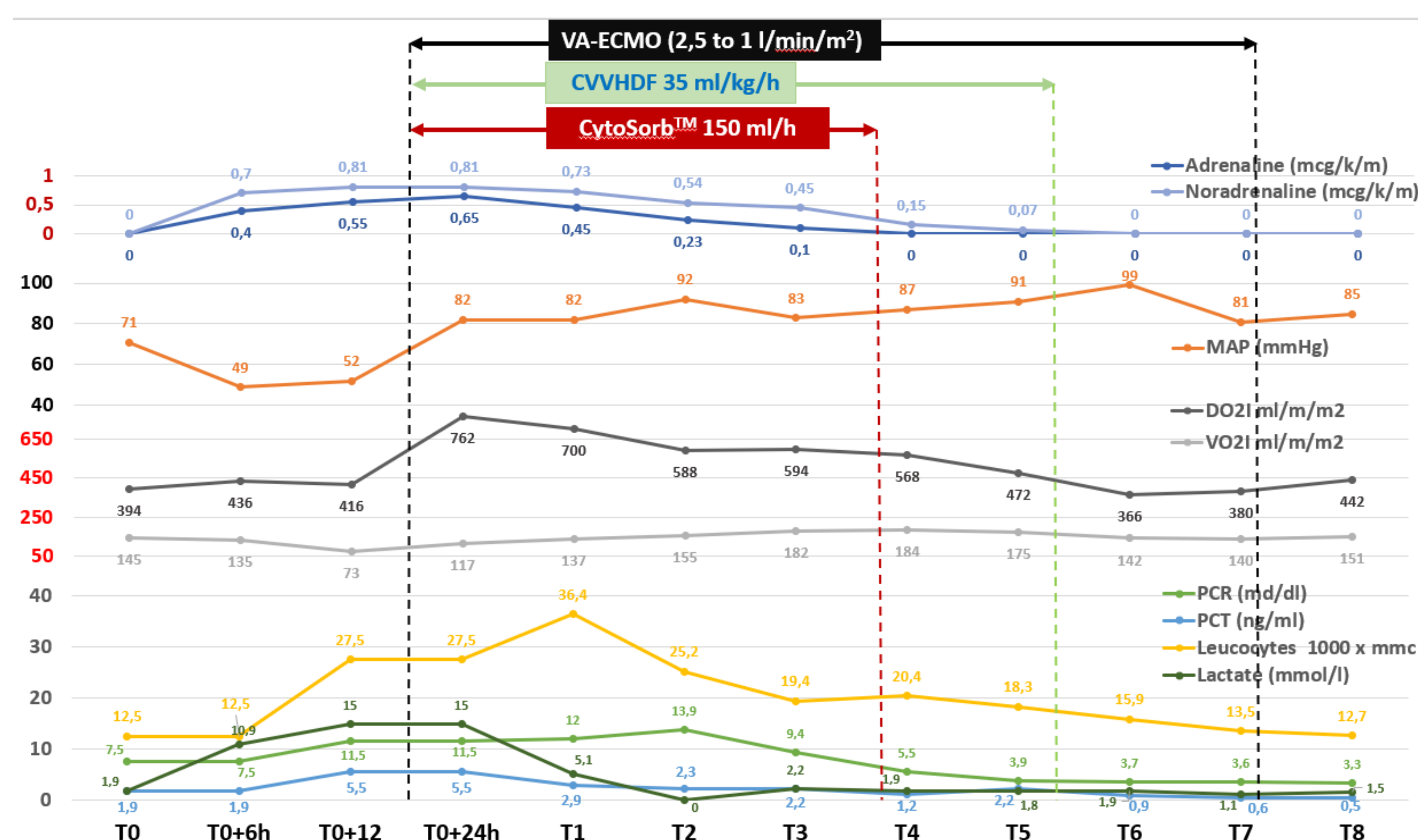


Figure 1: Patient A