

# The use of CytoSorb in patients with cardiogenic shock treated with VA-ECMO support



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## Background

Venoarterial Extracorporeal Membrane Oxygenation (VA-ECMO) is increasingly used for treating cardiogenic shock, protected interventions and life support including resuscitation. Most patients on VA-ECMO are affected by a systemic inflammatory response with cytokine release caused by the underlying disease as well as the VA-ECMO support itself, which contributes to tissue hypoperfusion, multi-organ failure and death. In this context, extracorporeal hemoadsorption by CytoSorb has emerged as a promising novel therapeutic principle. Here we described 2 patients treated with CytoSorb during VA-ECMO support (EcmoLife) and CRRT (Fresenius Medical Care).

## Methods

Patient 1 (male, 79 years) suffered from postcardiotomy cardiogenic shock after elective coronary artery bypass graft surgery. He had severely increased inflammatory parameters and was treated with VA-ECMO and hemadsorption (72 hrs). Patient 2 (male, 56 years) suffered from post-MI cardiogenic shock. He underwent emergent coronary artery bypass graft surgery, VA-ECMO and consecutive hemadsorption (total 72 hrs). The CytoSorb adsorber cartridges were integrated in CRRT-CVVHDF with heparin as regional anticoagulation.

## Results

In patient 1 VA-ECMO was started on postoperative day 2. After 17 days of VA-ECMO, due to worsening clinical conditions, it was decided to start hemadsorption therapy with CytoSorb. After 3 days, there was worsening of the clinical condition leading to the patient's death. In the second patient, VA-ECMO was started on postoperative day 1 and CytoSorb treatment was institute after 3 days, with an improvement of blood parameters. The SVO<sub>2</sub>, tissue perfusion index, reduced in patient 1 but increased considerably in patient 2. The indexes of organ dysfunction increased in patient 1 despite CytoSorb treatment: CPK-MB 11 to 89 UI/L, GOT-AST 156 to 430 U/L, GPT-ALT 54 to 77 U/L, Amylase 117 to 404 U/L. In the patient 2, these values improved: CPK-MB 207 to 36 UI/L, GOT-AST 500 to 65 U/L, GPT-ALT 329 to 88 U/L, Amylase stable around 180 U/L. Blood values of both patients are shown in figure 1.

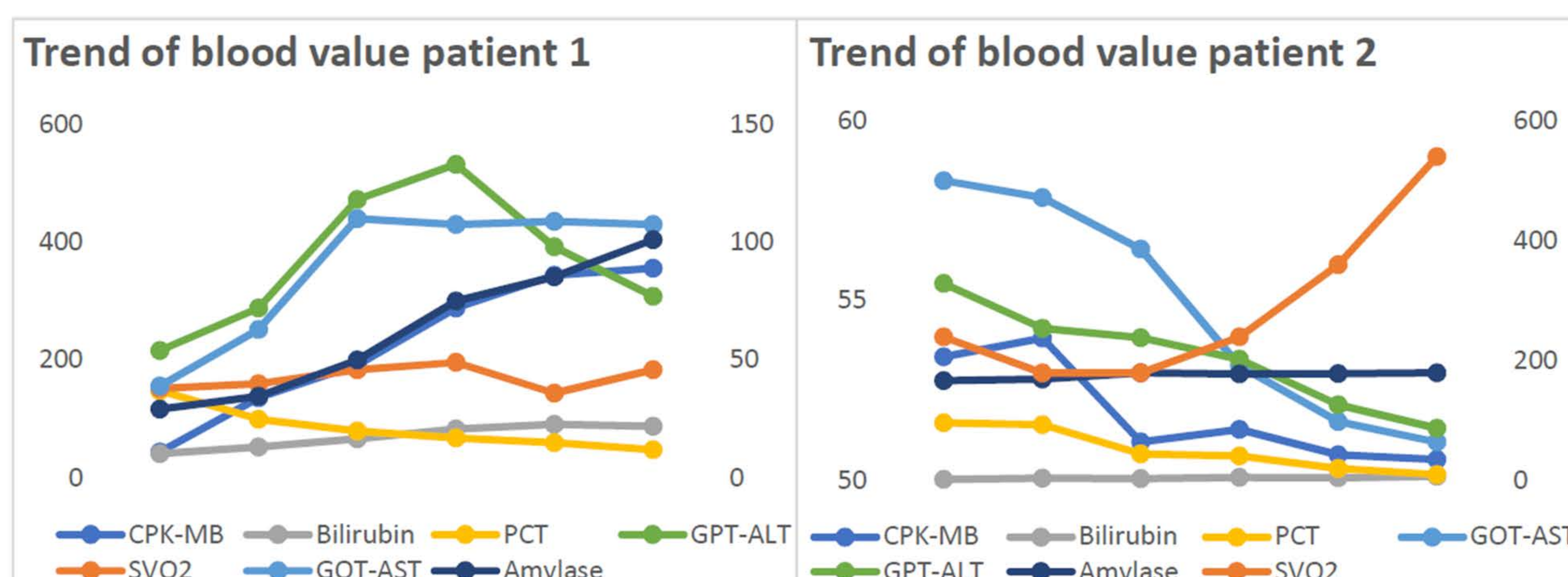


Figure 1: Trend of blood and hemodynamic values of both patients.

## Conclusion

Hemadsorption may offer a potentially promising therapeutic option for critically ill patients undergoing extracorporeal life support therapy, with cytokine reduction, mitigated inflammatory response and improved tissue perfusion indexes. These two cases confirm the importance of early treatment with CytoSorb.