



Cytokine elimination in suspected COVID-19 perimyocarditis

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Background

Only recently studies have been able to demonstrate the safety and efficacy of purification therapies in inflammatory diseases. Here we present the management of a young (21y) male patient in severe cardiogenic shock due to COVID-19 perimyocarditis admitted to the ICU at Bolzano Central Hospital.

November 30th 2020 the patient developed high fever (>40 C) and diarrhea. After unsuccessfully being treated orally with a macrolide he was admitted to a peripheral hospital the 4th of December. The day after he deteriorated, required transfer to the ICU, endotracheal intubation and pharmacological cardiovascular support (Norepinephrine, Levosimendan). Antimicrobial treatment was started with piperacillin/tazobactam, linezolid and metronidazole. Despite multiple radiological and microbiological diagnostic attempts the origin of this severe septic shock remained unclear. December 6th the patient was transferred to Bolzano Central Hospital for VA-ECMO evaluation.

Methods

The transesophageal echocardiography revealed 15-20% of EF, lactate (5,2 mmol/l), cardiac enzymes (TropT 1400 mcg/l) and inflammatory parameters (PCT 35 ng/ml, IL-6 685 pg/ml) were elevated. We performed cardiac monitoring via Swan-Ganz catheter. The cardiac index was 1,6 l/min/m². The peak dosage for Norepinephrine reached 7,5mg/h (1,47 mcg/kg/min). At Bolzano ICU we facilitate the pharmacological therapy with milrinone, vasopressin and low dose epinephrine. Furthermore, we impost continuous hemodiafiltration with CytoSorb[®] filter.

Results

Only hours after the start of filtration therapy the patient improved and we were able to gradually reduce catecholamine therapy, lactate values decreased. A VA-ECMO implantation was no more necessary. December 10th, we saw a stable patient without ventilatory or cardiovascular support, at echocardiography we revealed a normal EF.

Conclusion

Clinically we saw a young patient in severe septic/cardiogenic shock due to peri myocarditis. Yet diagnostic attempts (CT-scan, multiple blood/urinary/liquor cultures) remained negative. Despite multiple negative PCR tests for SARS-CoV2 infection we performed specific immunoglobulin analysis and received a positive result for IgM. We therefore conclude on a COVID-19 associated perimyocarditis. Furthermore, this case illustrates the potential benefit of cytokine filtration and elimination in COVID-19 patients with altered IL6 levels.