CONTINOUS RENAL REPLACEMENT THERAPY WITH CYTOSORB IN A POLYTRAUMA PATIENT - WHEN TO START? A CASE REPORT.

Mira Markovic[a], Violeta Knezevic[a,b], Tijana Azasevac[a,b], Gordana Strazmester Majstorovic[a,b], Vladimir Veselinov[a], Dragana Pencic[a], Igor Mitic[a,b]
[a]Clinic for Nephrology and Clinical Immunology, Clinical Centre of Vojvodina, Novi Sad, Serbia", [b]University of Novi Sad, Faculty of medicine Novi Sad, Serbia

Background: Polytrauma is one of the leading causes of death in the young population. The most common causes of late death in those patients are septic complications and multi-organ failure. We evaluated use of continous renal replacement therapy (CRRT) with Cytosorb haemoadsorber and with Oxiris adsorptive membrane in treatment of acute renal injury (AKI) caused by rhabdomyolysis. The focus was on optimal timing for inititation of CRRT.
Methods: A 31-years-old man, without comorbidities was admitted at Intensive care unit with severe polytrauma (head injuries, thoracic trauma, multiple fractures). He was haemodinamicly instable, sustained by norepinephrine infusion, septic, with respiratory failure requiring invasive mechanical ventilation, APACHE II score was 30 and Glasgow Coma Scale Score was 3. AKI was diagnosed at the admission, caused by haemorrhagic shock and crush syndrome. On the 2nd day was started CRRT with regional citrate anticoagulation. We performed two procedures of continuos venovenous haemodiafiltration (Qb 150 ml/min, Qd 1200 ml/h, Qrpre 2000 ml/h, Qrpost 500 ml/h, dialysis dose 40 ml/kg/h). First one was with CytoSorb haemoadsorber and the second procedure with Oxiris adsorptive membrane (Gambro, AN-69, based membrane, surface treated by polyethylenimine and grafted with heparin). Decline of pro-inflammmatory markers and improvement of kidney and liver function was noticed after procedures. Despite all efforts of resuscitation patient died on the 6th day of hospitalisation.
Results: Values of pro-inflammatory, kidney and liver markers, blood gas analysis, vasopressor dose before and after CRRT with use of haemoadsorber and adsorptive membrane are presented in Table 1.

Table 1. Values at admission, before and after CRRT

	ICU admission	2nd Day Before CRRT	4th Day After CRRT
Interleukin 6 (pg/ml)	-	599.4	361.2
C-reactive protein (mg/l)	1.8	125.5	214.9
Procalcitonin (ng/ml)	4.18	135.0	63.35
White blood cells count (10^9/l)	27.86	11.15	7.34
pH	7.24	7.27	7.50
Lactate (mmol/l)	3.41	3.73	2.19
Urea (mmol/l)	5.3	14.7	10.0
Creatinine (µmol/l)	143.00	400.00	305.00
Potassium (mmol/l)	6.88	7.50	3.79
Norepinephrine (µg/kg/min)	1.1	0.6	0.15
ALT (u/l)	168	482	393
AST (u/l)	417	2355	1561
CK (ng/ml)	1380.7	1140.0	1024.6
SAPS II	68	80	90
APACHE II	30	35	60
MAP (mmHg)	67	76	58

Legend: ALT – alanine aminotransferase, AST - aspartate aminotransferase, CK - creatine kinase, SAPS - simplified acute physiology score, APACHE - acute physiology and chronic health evaluation, MAP - mean arteriale pressure

Conclusion: Insufficient response to the treatment indirectly indicates the importance of early initiation of CRRT, within 12 -24 h of diagnosis of AKI. It also indicates that lowering the cut off values of procalcitonin, Interleukin-6 and APACHE II score before treatment with Cytosorb should be considered.