

First Use of a Hemoadsorption Device (Cytosorb®) During Continuous Venovenous Hemofiltration (CVVH) in a Patient Undergoing Replantation With ABO Incompatible Graft for Acute Graft Dysfunction.

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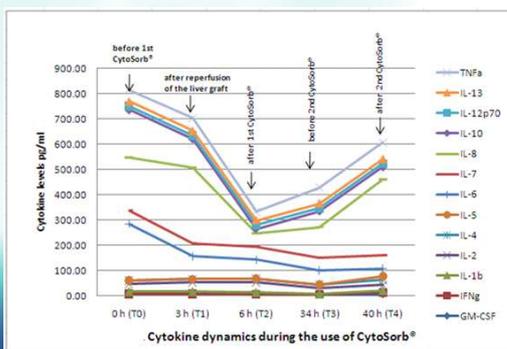
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Background

Acute graft dysfunction (AGD) after liver transplantation (LT) represents a life-threatening event, making survival impossible without retransplantation. Etiology of AGD is poorly understood but has been associated with prolonged ischemia times as well as several donor factors. The inflammatory response syndrome (SIRS) accompanying AGD is responsible for most of the systemic complications and increased mortality.

Methods

We present the case of a 46 years old man that underwent deceased donor LT (77 yo donor, donor risk index 2.106) for HBV and alcoholic cirrhosis (MELD score 27 and MELD-Na score 30). AGD was diagnosed in the first postoperative day and emergency retransplantation (ABOincompatible: graft A+ to recipient B+) was performed 36 hours after the first LT. An adsorbent column (Cytosorb®) was used in conjunction with continuous venovenous hemofiltration (CVVH) during retransplantation for the entire duration of surgery and in the first postoperative day. Cytokine levels were measured at the beginning of surgery (T1), after graft reperfusion (T2), at the end of surgery (T3) and before (T4) and after (T5) the second Cytosorb. Two plasmaexchange therapies were applied (according to our local ABO incompatible protocol) after retransplantation. Haemodynamic parameters, biochemical assays and vasopressor support was noted.



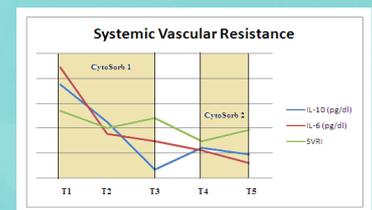
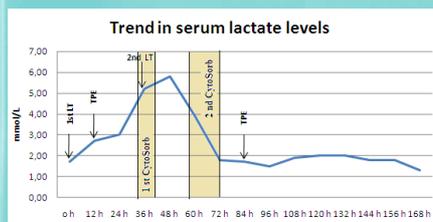
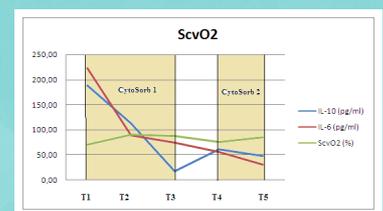
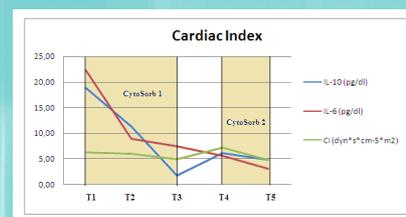
Results

During the use of first Cytosorb® proinflammatory cytokines IL-1b, TNF-alfa, IL-6 and IL-8 levels decreased and antiinflammatory cytokines IL-4, IL-13 remained constant and within the normal range. Also, IL-10 and MCP-1 levels decreased 10-fold to about normal levels. The patient had an improvement in hemodynamics with a stabilized mean arterial pressure and a continuous decrease in vasopressor support (Noradrenalinum) during surgery. Noradrenalinum was discontinued at the end of surgery. Serum lactate levels decreased from 6.7 to 4.5 mmol/l and base excess elevated from -7.1 to -4 mmol/l.

A further decrease was observed in IL-6 and MCP-1 levels during the use of the second Cytosorb® with the concentration of other cytokines remaining relatively constant. An improvement in cardiac output was observed after the second Cytosorb: cardiac index decreased from 7.2 to 4.1 l/min/m² systemic vascular resistance index increased from 823 to 1438 dyn*s*cm⁻⁵*m². Both lactate levels and central venous oxygen saturation (ScvO₂) returned to normal levels. The patient was extubated 12 hours after re-transplantation.

Liver function returned to normal within the next 5 days and he was discharged from the Post Anaesthesia Care Unit 7 days after retransplantation and from hospital in 35th postoperative day. At the 4 month follow-up the patient is in good clinical state with normal liver function.

	GM-CSF	IFNγ	IL-1b	IL-2	IL-4	IL-5	IL-6	IL-7	IL-8	IL-10	IL-12p70	IL-13	MCP-1	TNFα
T1	7,55	0,50	8,73	30,53	14,37	<2,00	223,18	51,31	210,69	188,95	14,43	19,22	1963,67	45,49
T2	7,55	<2,49	8,96	37,81	12,66	<2,00	89,99	52,20	297,74	113,74	12,95	19,22	2369,63	49,70
T3	7,20	<2,49	6,62	40,35	13,23	<2,00	75,65	51,31	53,22	17,54	14,18	18,84	257,07	35,13
T4	5,22	<2,49	2,39	22,27	14,37	<2,00	56,95	51,31	119,90	61,34	12,95	18,45	509,99	62,71
T5	6,19	6,80	7,79	22,43	21,25	12,94	31,81	51,31	299,89	48,65	13,68	18,84	399,14	64,65
Mean M	5,38	0,50	2,62	21,81	13,92	12,94	7,25	26,54	20,20	14,23	12,79	18,07	281,61	16,09



Conclusion

First use of a hemoadsorption device during CVVH in a patient undergoing retransplantation with ABOi graft for AGD. The use of Cytosorb® during a non-infectious SIRS was associated with an improvement in both cardiac output, haemodynamics and liver recovery. Hemoadsorption columns may find a new indications in bridging patients with acute liver failure or AGD to LT.