

## EFFECTS OF INITIATION OF CONTINUOUS RENAL REPLACEMENT THERAPY ON HEMODYNAMICS IN CRITICALLY ILL CHILDREN

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**Introduction:** There are no studies analysing the initial hemodynamic impact of continuous venovenous haemofiltration (CVVH) in critically ill children when hemodynamic instability, often hypotension, is common. Traditional responses such as volume or vasoconstrictors may be inappropriate

**Hypothesis:** Accurate hemodynamic assessment may allow logical treatment during initiation of CVVH

**Methods:** Prospective observational study in 9 critically ill children analyzing initial hemodynamic changes during CVVH. Heart rate, blood pressure, central venous pressure (CVP) were recorded; cardiac index (CI), systemic vascular index (SVR<sub>i</sub>) and stroke volume index (SV<sub>i</sub>) were measured at 15 minutely intervals for 1 hour using a non-invasive cardiac output monitor (USCOM). No changes in inotropic therapy or volume administration occurred during this period.

**Results:** CVVH induced an initial significant decrease of the volume related hemodynamic parameters SV<sub>i</sub> and CVP. Subsequently a significant increase in SVR<sub>i</sub> and decrease in CI were seen. Central venous oxygen saturation (ScvO<sub>2</sub>) remained unchanged)

**Conclusions:** Initiating CVVH in critically ill children induces a hypovolemia leading to a systemic cardiovascular response of vasoconstriction with an overall decreased cardiac index. This may represent hemodilution with effective lowering of inotropic delivery through an increased volume of distribution or alternatively there may be a direct negative inotropic effect of initiating CVVH. Intropes rather than vasoconstrictors may be indicated.

Measured HR, CVP, MABP, SVI, CI and ScvO<sub>2</sub> and calculated SVR<sub>i</sub> of the five timings {mean (SD)}

	Pre CVVP	15 mins	30 mins	45mins	60mins
HR	126 (14)	14 (14)	125 (12)	104 (12)	105 (11)
CI l/min/m <sup>2</sup>	3.0 (0.6)	2.5 (0.5)	2.4 (0.6)	2.4 (0.4)	2.2 (0.5)**
SV <sub>i</sub> ml/min/m <sup>2</sup>	23.8 (5.3)	17.2 (4.2)	19.2 (5.1)*	23.1 (4.2)	21 (4.2)
CVP mmHg	12.6 (1.6)	11.4 (1.5)	9.5 (1.7)*	8.8 (1.7)	9.3 (1.3)
MABP mmHg	61 (4.6)	59.5 (3.6)	62.3 (4.5)	63.3 (3.4)	60.1 (3.3)
SVR <sub>i</sub> dyn/s/cm/m <sup>2</sup>	540 (299)	585 (277)	658 (310)	750(256)	744 (296)**
ScvO <sub>2</sub> %	76.5 (3.6)	74.6 (4.7)	73.5 (5.1)	74.5 (5.5)	74.9 (5.0)

\*p< 0.01 compared to CVP pre CVVP;\*\* P< 00.5 compared to Pre CVVP