

SUPERIOR VENA CAVA FLOW DURING HYPOTHERMIA IN ASPHYXIATED INFANTS: A PRELIMINARY REPORT

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Background and aims: During therapeutic hypothermia, heart rate (HR) decreases and cardiac output (CO) may be affected, although sufficient tissue perfusion is usually maintained. Blood pressure (BP) monitoring is the most widely used index of cardiovascular status. Maintaining normal brain perfusion is critical in asphyxiated infants. The aim of the study was to assess if normal BP can correlate with adequate brain perfusion, as assessed by superior vena cava flow (SVCF)

Methods: Three consecutive babies, who underwent whole body hypothermia, were enrolled into the study. Hemodynamics was assessed by BP monitoring and blood gases (lactate and base deficit). At least one echocardiogram was performed during hypothermia. In addition to standard echocardiography, SVCF and right ventricular output (RVO), as an index of systemic perfusion not affected by ductal patency, were measured. Volume expanders and inotropes were given according to local guidelines.

Results: Two infants survived, one died. Median HR, systolic blood pressure (SBP), SVCF and RVO were 105 bpm, 64 mmHg, 79 and 245 ml/Kg/min, respectively.

No correlation could be found between SVCF and SBP ($r = -0.2218$; $p = 0.673$), or between RVO and SBP ($r = -0.2104$; $p = 0.689$). A significant positive correlation was found between SVCF and HR ($r = 0.8948$; $p = 0.016$). Correlation between RVO and HR did not reach significance ($r = 0.7971$, $p = 0.058$).

Conclusions: Given the lack of relationship between BP and adequate brain perfusion, as evaluated by SVCF, our preliminary results underline the clinical importance of functional echocardiography during hypothermia.