

CEREBRAL FRACTIONAL TISSUE OXYGEN EXTRACTION IN INFANTS WITH AORTIC COARCTATION

M. Mulderij¹, M.E. Laan, van der¹, E.M.W. Kooi¹, E.A. Verhagen¹, R.M.F. Berger², A.F. Bos¹

¹*Department of Pediatrics, Division of Neonatology, University Medical Center Groningen, University of Groningen,* ²*Department of Pediatrics, Division of Pediatric Cardiology, University Medical Center Groningen, Groningen, The Netherlands*

Introduction: Infants with aortic coarctation may have altered cerebral perfusion. With Near-Infrared Spectroscopy (NIRS), cerebral tissue oxygen extraction (FTOE) is calculated. FTOE reflects cerebral perfusion.

Objective: To determine the course of FTOE in the first 48 hours (hrs) of admission in infants with aortic coarctation and to relate this course to short-term outcome.

Methods: We included all infants with aortic coarctation and circulatory failure admitted to the NICU of the UMCG in 2009-2010 in whom NIRS-monitoring was performed. Mean values of FTOE were calculated every 12hrs over 2hr-periods. Adverse outcome was defined as need for emergency surgery or death.

Results: We included seven infants. Median gestational age was 37.3 weeks (range:31.7-39.6), birth weight: 3340 grams (1345-3910), postnatal age: 10 days (1-18), lactate at admission: 6.7 mmol/l (2.5-19.8). Two infants had an adverse outcome within 36hrs after admission; one needed emergency surgery, one died. Infants with adverse outcome showed a high and continuously increasing FTOE over 36hrs while infants with favourable outcome showed a lower and stabilizing FTOE (Table).

Conclusion: Infants with aortic coarctation show a high FTOE during the first 48hrs of admission, which indicates compromised cerebral perfusion possibly due to circulatory failure. Increasing FTOE over the first 36hrs of admission might indicate adverse short-term outcome.

| | 0-12hrs | 12-24hrs | 24-36hrs | 36-48hrs |
|---|------------------|------------------|------------------|------------------|
| Adverse outcome (N=2)(median(range)) | 0.47 (0.37-0.56) | 0.58 (0.51-0.65) | 0.69 (0.62-0.77) | - |
| Favourable outcome (N=5)(median(range)) | 0.30 (0.19-0.47) | 0.39 (0.15-0.56) | 0.25 (0.15-0.48) | 0.28 (0.23-0.47) |

[Course of FTOE in infants with aortic coarctation]