

PS-380 HEART RATE CHARACTERISTICS INDEX PREDICTS EXTUBATION FAILURE IN PRETERM INFANTS

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10.1136/archdischild-2014-307384.678

Background Determining extubation readiness in preterm infants is often difficult, and infants who have respiratory failure and require reintubation incur additional morbidities. A heart rate characteristics index (HRC index or HeRO Score) developed for sepsis detection in VLBW infants has been shown to be associated with other adverse events including respiratory decompensation (Sullivan, J. Paediatrics 2014).

Objective Test the hypothesis that the HRC index predicts extubation failure in VLBW infants.

Methods We analysed all extubations within 3 weeks of birth for VLBW infants enrolled in a multicenter trial of HRC index monitoring (HeRO trial) randomised to the control arm (HeRO scores not displayed to caregivers).

Results There were 427 extubations in 365 VLBW infants. Excluding 20 infants who died within 3 days, 98 (24%) infants failed extubation, requiring reintubation within 72 h. Infants who failed extubation had significantly lower postmenstrual age (mean PMA 27.2 vs 28.6 weeks) and higher HRC index (2.2 vs. 1.5). Relative risk of extubation failure if PMA was <26 weeks or if HRC index was >1.0 were 2.3 and 2.2, respectively. HRC index added to PMA in predicting extubation failure, and infants <26 weeks PMA with HRC index >1.0 had 55% failure rate (Table).

Conclusion The HRC index adds to PMA for prediction of extubation failure in VLBW infants.

Abstract PS-380 Table 1

Category	#Risks	Failed	Succeeded	% Failure	CI
High PMA, Low HeRO	0	23	149	13%	8%–20%
Either Low PMA or High HeRO, not both	1	54	143	27%	21%–34%
Low PMA, High HeRO	2	21	17	55%	38%–71%

PS-381 NASAL HIGH FREQUENCY VENTILATION IS NOT MORE EFFECTIVE THAN NONINVASIVE VENTILATION TO PREVENT EXTUBATION FAILURE IN VERY PRETERM INFANTS

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10.1136/archdischild-2014-307384.679

Background In animal models nasal high frequency oscillatory ventilation appears to provide better lung development and less injury that means it could be protective against repeated need of conventional ventilation. In a randomised study we compared the clinical efficacy of nasal high frequency oscillatory ventilation (nHFOV) and nasal intermittent positive pressure ventilation (NIPPV) in prevention of repeated intubation in preterm infants with very low birth weight.

Methods 24 preterm infants with birth weight <1500 g on conventional mechanical ventilation (MV) were randomly assigned

into two groups before extubation within 7 days of age. 12 infants with gestational age of 27.75 (2.41) weeks were treated with nHFOV and 12 infants with gestational age of 27.66 (1.66) wks were extubated to NIPPV for at least 72 hours. The primary study outcome was the repeated need for MV within 72 hours after primary extubation. The incidences of BPD at 36 weeks' corrected age were compared in the groups as well. BPD was defined according to the NIH consensus definition in modification of Walsh et al. (2003).

Results Extubation failure rate after primary extubation was the same in the both groups – 41.67%. There was no difference in total duration of respiratory support between the groups. BPD developed in 2 infants (16.67%) in the nHFOV group and in 1 infant (8.33%) in the control group ($p > 0.05$).

Conclusions In this study nHFOV was not found to be more effective than NIPPV in prevention of primary extubation failure in preterm infants with very low birth weight.

PS-385 OUTCOMES OF A FEASIBILITY STUDY ON CO₂ MONITORING IN THE DELIVERY SUITE

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10.1136/archdischild-2014-307384.680

Background CO₂ is not routinely measured in the delivery suite during neonatal resuscitation.

Objectives To determine

1. Is capnography feasible in the delivery suite for preterm infants (<32 weeks)?

2. Does capnography use in the delivery suite enhance neonatal adaptation as determined by incidence of normocarbica following neonatal unit admission?

Methods 2 groups of infants were included. The first cohort did not have capnography used during their care in the delivery suite and were part of a study assessing blood sampling in preterm infants (Nov 12 – April 2013). The second group of infants had capnography performed in the delivery suite. A blood gas analysis reading of 5–8 Kpa was deemed to be within a normal range and was the determinant of a positive outcome. Ethics approval was granted and parental consent was obtained in all. Physicians were not instructed to achieve any particular EtCO₂ reading whilst in the delivery room.

Results 83 infants were included in this study, 48 in the first cohort and 35 in the capnography cohort. Capnography was used in all infants in the prospective cohort. There was no difference in mean gestational age between the groups (28.4 ± 3.1 weeks versus 28.7 ± 1.8 weeks). The percentage of normocarbica was 47.9% (n = 23) in the first cohort compared to 51.4% (n = 18) in the second cohort (p -value 0.52). There was no difference in the incidence of hypocarbica between the groups (8.8% vs. 8.5%).

Discussion Our results have shown that it is feasible to use capnography in the delivery suite. Capnography appears safe and was not associated with an increased incidence of hypocarbica. Randomised controlled trials with pre-determined acceptable EtCO₂ levels are needed to determine whether capnography for PPV is associated with improved neonatal outcomes.