

neurological sequelae. Over-ventilation in infants with HIE can lead to hypocarbia and consequent cerebral vasoconstriction further increasing the risk of brain injury. Our aim was to assess the incidence of hypocarbia in HIE and identify infants at increased risk of hypocarbia.

**Methods** Retrospective review of term admissions with HIE to a tertiary neonatal intensive care unit from 2008 to 2013. Hypocarbia was defined as a partial blood pressure of CO<sub>2</sub> (pCO<sub>2</sub>) ≤ 4 kPa.

**Results** 74 infants were reviewed. The median (interquartile range) gestational age was 40 (38–41) weeks. 47 (64%) were actively cooled. Arterial cord pH was 6.99 (6.80–7.10). 40 (54%) infants had hypocarbia on day 1: pCO<sub>2</sub> was 3.35 (2.84–3.73) kPa and duration of hypocarbia was 160 (120–300) minutes. 48 (64.9%) were ventilated: 11 (22.9%) with volume targeted-ventilation, 36 (75.0%) with non-volume-targeted ventilation and 1 (1.4%) with high-frequency oscillation. Lowest CO<sub>2</sub> was not significantly different but duration of hypocarbia was significantly longer (p < 0.05) in infants on non-volume-targeted ventilation [200 (180–390) minutes] compared to infants on volume-targeted ventilation [120 (90–225) minutes]. On day 1, a pCO<sub>2</sub> <4 kPa was recorded in 36 of 48 infants that were mechanically ventilated (75%), compared to 4 of 26 that were spontaneously breathing (15.4%) [Odds ratio: 16.5, Confidence Interval: 4.73–57.76].

**Conclusions** Hypocarbia is frequently encountered in HIE. Mechanical ventilation of infants with HIE should aim to avoid hypocarbia by applying “neuroprotective” ventilation strategies such as volume-targeted ventilation.

**PO-0733 MINIMAL INVASIVE SURFACTANT THERAPY: CUI BONO?**

*SM de Tollenaer, J Bierhuizen, HLM van Straaten. Neonatology, Isala Clinic, Zwolle, Netherlands*

10.1136/archdischild-2014-307384.1373

**Background** Minimal invasive surfactant therapy (MIST) is associated with a diminished need for mechanical ventilation. Insufficient insight exists in predictive success factors.

**Aim** Defining success factors for MIST.

**Methods** From 2011–2013 preterm infants admitted to the NICU with respiratory distress and radiographically established IRDS with FiO<sub>2</sub> <0,4 were included for MIST procedure with surfactant (Survanta®, 100 mg/kg) during nCPAP/nIPPV support. Therapeutic success was defined as decreased need for oxygenation without endotracheal ventilation support for 24 h. Patient characteristics were noted; including stress, defined as clinical discomfort and/or tachycardia, as well as procedure related desaturation (minimum 80%, < 30 seconds) bradycardia and complications (tracheal injury, pneumothorax or lung haemorrhage).

**Results** 40 neonates (GA 24<sup>+2</sup>–37<sup>+1</sup> weeks [30 weeks], birth weight 600–3330 gram [1375 gram], IRDS grade I-III) were eligible. In 38 patients MIST was performed (2/40 were nonetheless intubated due to unrest). Tube insertion caused bradycardia with spontaneous recovery in one patient. Surfactant administration caused desaturation with spontaneous recovery in all patients and apnea in one patient. There were no complications. Therapeutic success was reached in 24/38 (63,2%) patients. In 6/24 (25%) respiratory adjustments were necessary; increasing PEEP in 2/24, starting nIPPV in 4/24. Causes for intubation 14/38 (27,8%) were rebound IRDS (6/14), sepsis (5/14) and insufficient drive to breath 2/14. Gestational age, birth weight, FiO<sub>2</sub>/

IRDS degree, timing of MIST and gastric tube route (nasal/oral) were not correlated with success.

**Conclusion** Success factors for MIST are a calm patient, an adequate drive to breathe and the absence of sepsis.

**PO-0734 EFFECT OF VOLUME-TARGETED VENTILATION IN EXTREMELY LOW BIRTHWEIGHT INFANTS UNDER HIGH FREQUENCY OSCILLATORY VENTILATION**

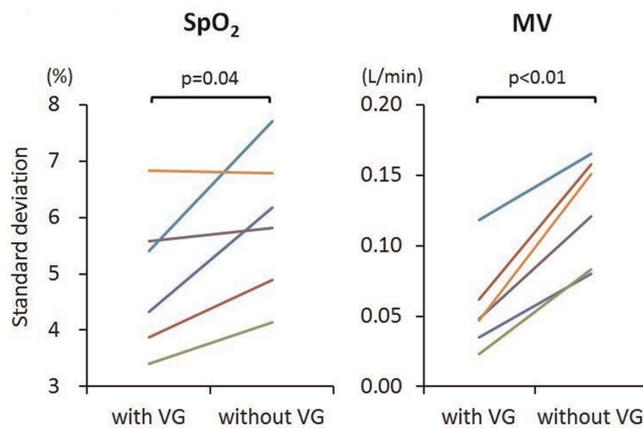
*M Enomoto, S Kikuchi, Y Katayama, A Takei, H Ikegami, H Minami. Pediatrics and Neonatology, Takatsuki General Hospital, Takatsuki, Japan*

10.1136/archdischild-2014-307384.1374

**Background and aims** Volume-targeted ventilation, or volume guarantee (VG) is known to improve neonatal prognosis in pre-term infants, when added to conventional ventilation. Yet, VG effect is unclear when combined with pressure-controlled high frequency oscillatory ventilation (HFOV). The aim of this study is to investigate the effect of VG mode added to HFOV on respiratory parameters.

**Methods** We conducted a prospective study in extremely low birthweight infants who were ventilated after 28 days of age with HFOV (Babylog VN500). VG was applied for 8 h and VG was removed for the following 8 h. Frequency (12 Hz) and mean airway pressure were fixed during study period in each case. Tidal volume, amplitude, minute volume (MV), heart rate (HR) and oxygen saturation (SpO<sub>2</sub>) data were analysed.

**Results** Six neonates were included (gestational age 22 w 5 d–23 w 6 d, birthweight 424–584 g). Standard deviations of both SpO<sub>2</sub> and MV with VG were significantly smaller than those without VG (Figure, pared t-test). HR fluctuation was not different. In total, desaturation episodes (SpO<sub>2</sub>).



**Abstract PO-0734 Figure 1**

**Abstract PO-0734 Table 1 Comparison of desaturation episodes**

Case	with VG	without VG	p
1	10.1%	27.5%	<0.0001
2	1.3%	5.5%	<0.0001
3	0.5%	2.3%	<0.001
4	9.4%	8.6%	0.6
5	10.1%	9.1%	0.5
6	13.6%	13.3%	0.8
Total	7.4%	11.2%	<0.0001