

Abstract 147 Table 1

	Preceding	Hypopnoea	Recovery
LBI*	1.4(0.1)	1.3(0.1)	1.3(0.1)
RR/min*	70(11)	13(7)	68(24)
Θ(°)	65±37	-	54±36
ΔEELV(VT units)#	0	-0.3 (-1.1, 0.5)	-0.2(-1.1, 2.2)
ΔVT(VT units)#	1	0.2(0.3)	1(0.6)
Co-efficient of variation (CV) for VT (%)*	40(31)	65(41)	38(24)

\*mean (SD) #median (range)

**Conclusions** A significant loss in EELV may occur during hypopneic phases of respiration in infants considered stable on CPAP. Further work is needed to determine the significance of these observations.

### 148 PARTIAL LUNG AERATION CAUSES VENTILATION/PERFUSION MISMATCH IN THE LUNGS AT BIRTH

doi:10.1136/archdischild-2012-302724.0148

<sup>1</sup>SB Hooper, <sup>1</sup>J Lang, <sup>2</sup>JT Pearson, <sup>1</sup>MJ Wallace, <sup>1</sup>ML Siew, <sup>3</sup>MJ Kitchen, <sup>4</sup>A Fouras, <sup>5</sup>K Wheeler, <sup>1</sup>GJ Polglase, <sup>6</sup>AB te Pas. <sup>1</sup>Monash Institute for Medical Research; <sup>2</sup>Monash Biomedical Imaging; <sup>3</sup>School of Physics; <sup>4</sup>Division of Mechanical and Aerospace Engineering, Monash University, Clayton; <sup>5</sup>Paediatrics, Royal Hobart Hospital, Hobart, VIC, Australia; <sup>6</sup>Pediatrics, Leiden University Medical Center, Leiden, The Netherlands

**Background** Although lung aeration increases pulmonary blood flow (PBF) at birth, the regional relationships between lung aeration and the increase PBF are unknown. We investigated the effect of partial ventilation on pulmonary vessels immediately after birth using simultaneous phase contrast X-ray imaging and angiography.

**Method** Newborn rabbits were delivered near-term (~30 d GA; term ~32 d GA) and an iodine contrast agent was infused into the jugular vein before and then during both unilateral (of the right lung) and then ventilation of both lungs. Visible vessels were counted and diameters and integrated intensity line profiles that transected vessels at different locations were measured; the latter provides a relative measure of PBF.

**Results** Unilateral ventilation of the right lung increased visible vessel number (from 15±1 to 44±4), vessel diameter (from 493±80µm to 543.2±84.3µm) and integrated intensity (from 2496±472 µm.AU to 6594±658 µm.AU) in the left lung while it was still liquid-filled and unaerated. As a result, the visible vessel number of perfused pulmonary vessels (right: 42±4, left: 44±4), mean vessel diameters and integrated intensity (left: 6594±658 µm.AU, right: 8012±1423 µm.AU) were not different between aerated and non-aerated lung regions. Angiography videos demonstrating the spatial and temporal changes in PBF after birth will also be presented.

**Conclusion** Partial lung aeration promotes a global increase in PBF resulting in a highly significant ventilation/perfusion mismatch in unventilated lung regions. These observations indicate that a previously unsuspected mechanism contributes to the increase in PBF at birth.

### 149 EVALUATION OF NEEDLE ACUPUNCTURE ACTIONS ON CLINICAL IMPROVEMENT PULMONARY FUNCTIONS, INTERLEUKIN-6, IMMUNOGLOBULIN-E AND MEDICATIONS USED OF ASTHMATIC CHILDREN

doi:10.1136/archdischild-2012-302724.0149

<sup>1</sup>NH Mohamed, <sup>2</sup>IAE Abdel Meguid, <sup>2</sup>HH Shaaban, <sup>1</sup>EM Ahmed Kamel. <sup>1</sup>Researches and Applications of Complementary Medicine Department, National Research Center; <sup>2</sup>Pediatric Department, Cairo University, Cairo, Egypt

**Background and aims** Bronchial asthma is one of the most common illnesses in children. The chronicity of bronchial asthma and the fear of steroid therapy cause many patients to seek alternative

methods of treatment such as Acupuncture, herbal medicine and massage therapy. The complementary and alternative medicine is a widespread phenomenon. In Europe, complementary therapies are used by 20–50% of the population. Among pediatric populations, Acupuncture is considered the backbone of the CAM modalities.

**Methods** we applied the acupuncture sessions for 30 cases of children who suffering from asthma on their conventional medical treatment on certain points according to Traditional Chinese Medicine for 12 sessions in one month and measuring of Pulmonary functions including (VC%, FVC%, FEV1%, FEF25–75%, FEF25%, FEF50%, FEF75%, PEF%), IL-6, IgE, Eosinophilic count before and after the sessions. Clinical grading and medications used before and after the acupuncture sessions measured.

**Results** There were significant improvement in Pulmonary functions: VC% (p<0.001), FVC% (p<0.001), FEV1% (p<0.001), FEF25–75% (p<0.001), PEF% (p<0.001), FEF25% (p<0.001) FEF50% (p<0.001), FEF75% (p<0.001). There were significant decrease in Eosinophilic count (p<0.001). More over there were improvement in IL-6 and IgE levels in the blood. However there were improvements in clinical conditions of the patients (symptoms, signs, grade of asthma) also there was decrease in their medications used.

**Conclusions** Acupuncture improves pulmonary functions of the children with bronchial asthma however it decreases the serum levels of Eosinophilic count, IL-6 and IgE with decrease all medications used by children before needle sessions.

### 150 NEUROCOGNITIVE DEVELOPMENT OF CHILDREN FOUR YEARS AFTER CRITICAL ILLNESS AND TREATMENT WITH TIGHT GLUCOSE CONTROL: A RANDOMIZED, CONTROLLED TRIAL

doi:10.1136/archdischild-2012-302724.0150

<sup>1</sup>M Gielen, <sup>1</sup>D Mesotten, <sup>1</sup>C Sterken, <sup>1</sup>K Claessens, <sup>1</sup>G Hermans, <sup>1</sup>D Vlasselaers, <sup>2</sup>J Lemiere, <sup>3</sup>L Lagae, <sup>4</sup>M Gewillig, <sup>4</sup>B Eyskens, <sup>1</sup>I Vanhorebeek, <sup>1</sup>PJ Wouters, <sup>1</sup>G Van den Berghe. <sup>1</sup>Intensive Care Medicine; <sup>2</sup>Child and Adolescent Psychiatry; <sup>3</sup>Pediatric Neurology; <sup>4</sup>Pediatric and Congenital Cardiology, KULeuven, Leuven, Belgium

**Background and aims** The first large RCT on tight-glucose-control (TGC) to age-adjusted normoglycemia in the pediatric-intensive-care-unit (PICU) (Vlasselaers 2009) revealed that TGC reduced PICU morbidity and mortality as compared with usual-care, but increased hypoglycemia ≤40 mg/dL. As both hyper- and hypoglycemia may adversely affect the developing brain, an assessment of long-term neurocognitive function was required to exclude harm and validate any short-term benefit of TGC.

**Methods** Follow-up of all 700 patients included in the original RCT, was performed 4 years after randomization. Death or disability precluding neurocognitive testing were a priori defined as poor outcomes. The primary endpoint was full-scale IQ, assessed with age-adjusted intelligence-tests (Wechsler-IQ-scales). Neurodevelopmental-testing also encompassed a neurological examination, and tests for visual-motor-integration (VMI-Beery-Buktenica-Developmental-Test), attention and executive functions (ANT-Amsterdam-Neuropsychological-Tasks), memory (Children's-Memory-Scale), and behavior (Child-Behavior-CheckList). For comparison, 216 healthy siblings and unrelated children were tested.

**Results** At follow-up, TGC in PICU had not increased the incidence of poor outcomes [19% vs.18%, univariable OR for poor outcome with TGC 1.10 (0.76–1.62), P=0.6]. Sixteen percent of the 700 ICU patients declined participation or were not contactable. TGC did not affect full-scale IQ [median 88.0 (IQR 74.0–100.0) vs. 88.5 (74.3–99.0), P=0.7], nor other scores for intelligence, visual-motor-integration, memory and behavior. TGC actually improved motor coordination (all P≤0.03) and cognitive flexibility (P=0.02), the latter up to the level of healthy children.