Methods: C57BL/6 mice postnatal day 7 were randomized to hypoxia (8%O2, 36±0.5ºC) for 120 min and reoxygenation in 21% (H21, n=6) , 40% (H40, n=6), 60 % (H60, n=7) or 100% (H100, n=6) O2 for 30 min. Mice were then sacrificed and rapidly dissected on ice after 150 min recovery. Two control groups not exposed to hypoxia, but either 21% (C21, n=5) or 100% O2 (C100, n=8) for 30 min were used as comparison. GeneChip Mouse Gene ST 1.0 Arrays (Affymetrix) were used to analyze whole genome expression. Statistical analysis was performed by using BAMarray software. The Gene Ontology and DAVID Bioinformatic Resources 2008 databases were used for functional analysis.

Results: 560 genes were significantly differentially expressed in lung tissue between group C21 and either of the four intervention groups (H21: 39, H40: 148, H60: 343, H100: 145). Preliminary gene ontology analyses of the genes in the H40 and H60 group indicate that cell growth and differentiation, energy metabolism and inflammation are processes represented.

Conclusion: A significant difference in gene expression in 560 genes in lung tissue of newborn mouse was found in our hypoxia and reoxygenation model using 21, 40, 60 and 100% oxygen. The impact of the gene expression alterations is undergoing further analysis.

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NEONATAL INOTROPIC SUPPORT: THE ROLE OF ANTENATAL RISK FACTORS

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Introduction: neonatal units often use a combination of Dopamine and Dobutamine to treat hypotension in the preterm infant. Hydrocortisone is often used as a third or fourth line agent. Infants who are growth restricted and preterm often require multiple agents to combat hypotension.

Objective: to assess in which neonates Dopamine and/or Dobutamine were insufficient and characteristics of neonates where Hydrocortisone achieved a clinical response.

Methods: retrospective analysis of antenatal and postnatal factors in preterm infants requiring inotropic support in a UK tertiary neonatal unit.

Results: 41 preterm infants, mean gestational age 26 (range 23- 34)weeks, Out of 41 neonates, there were 10 sets of twins (3 MCDA) and 1 triplet, 2 had reduced end diastolic flow (EDF), 9/41 babies were affected by intrauterine growth restriction (IUGR). Using stepwise regression it was found that blood pressure was affected by reduced end diastolic flow antenatally or antepartum haemorrhage. 12/41 neonates needed >1 medication: 40% of these were IUGR. 14/41 needed repeat saline or blood boluses (4/14 were IUGR). 40/41 needed Dopamine. 9/41 needed Dobutamine and 10/41 Hydrocortisone. 5/10 infants requiring hydrocortisone were IUGR.

Conclusion: Intrauterine growth restriction is a significant risk factor for requiring multiple inotropic agents, these infants often do not respond adequately to Dopamine or Dobutamine alone. This is likely related to adrenal insufficiency following chronic hypoxia. Early judicious use of hydrocortisone in this group of infants may lead to earlier resolution of hypotension and its sequelae. Antenatal factors play an important role in response to inotropic agents.

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PREDICTING NEONATAL AND INFANT MORBIDITY AFTER PERINATAL HYPOXIC-ISCHAEMIC INJURY

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Background: Perinatal asphyxia is a common cause of neonatal morbidity and mortality, affecting 2-4 in 1000 term live births each year. The prediction of neurodevelopmental outcome is important for prognosis and for tailoring neuroprotective therapies to babies most likely to benefit from such treatments. Researchers have suggested that a combination of antepartum and intrapartum factors be used to identify infants most at risk of experiencing adverse outcome.

Method: Scoring systems by Portman and Talati that predict outcome after perinatal asphyxia were applied to a patient cohort of 65 near-term infants. In addition, pre-, peri- and postnatal data of these patients were assesses by uni- and multivariate