Background/aims Intra-tracheal instillation of surfactant/budesonide significantly improves pulmonary status in animals. The aim is to investigate if this therapy would decrease the incidence of BPD or death.

Methods and materials This randomised controlled trial comprised 265 VLBW infants who had: 1) severe radiographic RDS, 2) requirement of IMV (FiO2 ≥ 0.5) shortly after birth: 131 received surfactant (S) (100 mg/kg) and budesonide (B) (0.25 mg/kg) (S+B gr.), 134 received S only (100 mg/kg) (S gr). The sample size was determined based on the hypothesis that 60% of infants in the S group and 40% in the S+B group would die or develop BPD defined at 34 weeks postm. age.

Results The S+B infant had lower tracheal aspirate interleukins 1, 6 and 8, lower OI, lower MAP in the early course of therapy, higher survival without BPD at 36 or 40 weeks PMA. Overall better outcome in African-American infants may be due to a racial response to iNO. Pulmonary and neurodevelopmental assessment are on-going.

Conclusions In VLBW infants with severe RDS, administration of surfactant/budesonide significantly decreases the incidence of BPD and BPD or death with no apparent adverse side effects.

Cardiac Failure in Congenital Diaphragmatic Hernia: Cause or Consequence?

O-023 CANDIDATE BIOMARKERS OF PULMONARY HYPERTENSION AND CARDIAC DYSFUNCTION IN CONGENITAL DIAPHRAGMATIC HERNA

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Background and aims In infants with congenital diaphragmatic hernia (CDH) plasma peptides which mediate, or are produced in response to pulmonary hypertension (PH) and cardiac dysfunction may be useful clinical biomarkers of disease severity. This study investigated correlation between candidate biomarkers and existing measures of oxygenation, PH, and cardiac function in CDH.

Methods Prospective observational study. Plasma samples were obtained for measurement of BNP, NTpro-BNP VEGF-A, PLGF, and Tropinin1. Concomitant echocardiographic measures of pulmonary artery pressure (derived from TR jet velocity [PAPest]; and PDA flow ratio [PDA/B[L]] and cardiac function (Tissue Doppler Imaging of systolic [S’] and diastolic [E’] velocities and tricuspid valve diastolic flow ratio [TV/E’)]) were obtained. Oxygenation index was calculated OI.

Abstract O-023 Table 1

<table>
<thead>
<tr>
<th>Candidate biomarker</th>
<th>PH measures</th>
<th>Septal TDI velocities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OI</td>
<td>PAPest</td>
</tr>
<tr>
<td>BNP</td>
<td>0.65</td>
<td>0.15</td>
</tr>
<tr>
<td>NTproBNP</td>
<td>0.62</td>
<td>0.43</td>
</tr>
<tr>
<td>Tropinin1</td>
<td>-0.01</td>
<td>-0.01</td>
</tr>
<tr>
<td>VEGF-A</td>
<td>0.64</td>
<td>0.18</td>
</tr>
<tr>
<td>PLGF</td>
<td>-0.34</td>
<td>-0.47</td>
</tr>
</tbody>
</table>

Numbers represent r values, significant correlations in bold (p < 0.05).
Results 480 biomarker assays were performed in 80 samples from ten infants. Of correlated positively with BNP, NTproBNP, and VEGF-A, and negatively with PLGF (Table 1). PH measures correlated negatively with PLGF and positively with NTproBNP and TroponinI. Measures of diastolic function correlated negatively with TroponinI and VEGF-A, and positively with PLGF.

Conclusions 1) Plasma biomarker analysis is feasible in infants with PH in CDH.
2) Worsening disease status (impaired oxygenation, PH, diastolic dysfunction) was associated with elevated BNP, NTproBNP, TroponinI and VEGF-A, and reduced PLGF.
3) The utility of these peptides as disease biomarkers, prognostic indicators, and their role in disease pathogenesis merits further investigation.

Cerebral Oxygenation

O-025 DO SUSTAINED LUNG INFLATIONS DURING RESUSCITATION OF PRETERM INFANTS AFFECT CEREBRAL BLOOD VOLUME AND CEREBRAL REGIONAL OXYGEN SATURATION?

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Background and aim Sustained lung inflations (SLI) promote lung aeration and alveolar recruitment.
Changes in total haemoglobin (ΔHb) and cerebral tissue oxygenation index (cTOI) measured by near-infrared spectroscopy (NIRS) give information on changes in cerebral blood volume (CBV) and regional oxygen saturation, respectively.
Do SLI during resuscitation affect CBV and cTOI?

Methods Preterm infants ≥28+0 and <34+0 gestational weeks and need for respiratory support (RS) during postnatal transition were included. Within the first 15 min of life of each subject ΔHb and cTOI were continuously detected by using ‘NIRO-200-NX’ (Hamamatsu, Japan).

Two groups were compared based on RS:
SLI group: RS was started by applying 1–2 SLI for 15sec at 25cmH2O and continued by continuous positive airway pressure (CPAP) or positive pressure ventilation (PPV).
Control group: CPAP/PPV depending on respiratory insufficiency.

Results 40 preterm infants (23 female) with mean gestational age of 32+1 weeks (±3 days) and mean birth weight of 1707 g (±470) were included. Demographic data did not show significant differences between groups.
Median ΔHb was in SLI/control group -0.38/0.20 μM 30 sec after initialising RS, -1.33/0.43 μM after 60 sec, 3.37/2.30 μM after 2 min, -0.19/0.46 μM after 3 min, 2.52/1.05 μM after 5min and 2.93/4.78 μM after 10 min.
Median cTOI increased in SLI/control group from 49/47% 30 sec after initialising RS to 54/50% after 60 sec, to 56/51% after 2 min, to 56/58% after 3 min, to 61/61% after 5 min, and to 65/69% after 10 min.
Conclusion Initialising RS immediately after birth by using SLI in preterm infants did not show significant differences in CBV and cTOI compared to control group.

O-026 INFLUENCE OF PATENT FORAMEN OVALE (PFO) ON REGIONAL CEREBRAL OXYGEN SATURATION DURING IMMEDIATE NEONATAL TRANSITION

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Background During postnatal transition there is a significant association between regional cerebral oxygen saturation of the brain and the shunt via the ductus arteriosus (DA). The influence of the patent foramen ovale (PFO) on the cerebral regional saturation remains as a question.

Aim The aim of the study was to investigate the influence of the PFO on the cerebral oxygen saturation, measured by near-infrared spectroscopy (NIRS) after 15 min of neonatal transition.

Methods Observational study. Term neonates (>37 weeks of gestational age) after elective caesarian section and without any...