PO-0754 NEUROENDOCRINE REGULATION OF RETINOIC ACID RECEPTORS DURING LUNG BRANCHING IN NORMAL AND HYPOPLASTIC LUNGS

[1]P Pereira Terra, [1]RS Moura, [1]C Nogueira-Silva, [2]J Correia-Pinto. *[1]Surgical Sciences Research Domain, ICVS/3B´S, Braga, Portugal; [2]Pediatric Surgery, Hospital de Braga, Braga, Portugal*

10.1136/archdischild-2014-307384.1393

The pathogenesis of pulmonary hypoplasia and congenital diaphragmatic hernia (CDH) is unknown. CDH represents a spectrum of lung hypoplasia and consequent pulmonary hypertension (PH) that leads to high morbidity and mortality of patients. We studied neuroendocrine factors and retinoic acid in order to achieve the relation underlying them.

At 13.5 days post-conception normal and CDH lungs were cultured *in vitro* during four days with DMSO, retinoic acid, bombesin, ghrelin, bombesin antagonist and ghrelin antagonist. Morphometric analysis were done after the culture and Western Blot (WB) was performed to quantify the protein levels of retinoic acid receptors (RAR). Immunohistochemestry (IHC) was performed as well on normal, nitrofen and CDH E17.5 lungs.

When compared with controls, CDH lungs presented higher expression of RAR in IHC and WB. Moreover in normal lungs after the administration of bombesin and ghrelin the expression of RAR also increases and in case of retinoic acid administration it decreases. Regarding bombesin and ghrelin antagonists administration, RAR expression decreases as it was expected. In terms of morphometry, treated groups showed an increase in branching, perimeter and area.

This study, shows for the first time that retinoic acid deficit on CDH lungs is associated with neuroendocrine factors overexpression. Furthermore, neuroendocrine factors such as ghrelin and bombesin sensitise for RAR expression.

PO-0755 *IN VIVO* MIR-200B AS A POTENTIAL THERAPY FOR CONGENITAL DIAPHRAGMATIC HERNIA

[1]P Pereira Terra, [2]N Khoshgoo, [3]B Iwasiow, [1]J Correia-Pinto, [3]R Keijzer. *[1]Surgical Sciences Research Domain, ICVS/3B´S, Braga, Portugal; [2]Department of Physiology, Manitoba Institute of Child Health, Winnipeg, Canada; [3]Department of Surgery, Manitoba Institute of Child Health, Winnipeg, Canada*

10.1136/archdischild-2014-307384.1394

Congenital diaphragmatic hernia (CDH) is associated with lung hypoplasia and pulmonary hypertension (PH) leading to a high morbidity and mortality. MicroRNAs, affect gene expression and miR-200b is involved in epithelial-mesenchymal transition in cancer and is downregulated in rat nitrofen lungs.

We hypothesised that miR-200b regulates lung branching. Therefore, we aimed to evaluate whether *in vivo* administration of miR-200b influences lung development and branching morphogenesis.

Timed-pregnant dams were treated with nitrofen (CDH group) or olive oil (control group) on E9 and received a tail vein injection of miR-200b mimics (5 mg/kg) or saline, respectively. At E21.5 and P0, we dissected the lungs and evaluated the presence or absence of CDH. We estimated the lung hypoplasia and we did histological studies to determine radial alveolar count (RAC) and medial arterial thickness.

Nitrofen lungs treated with miR-200 b mimics, *in vivo* display improved development and larger size. These embryos were also bigger than the embryos of the nitrofen group plus saline. Their size was similar to control embryos. After RAC analysis revealed that nitrofen treated lungs have larger alveolar spaces than nitrofen lungs. In terms of arteries we did not observe any differences.

Administration of miR-200b *in vivo* decreases lung hypoplasia and increases the size of the lungs as well as alveolar airspaces. These data show promissing results for miR-200b as a potential therapeutic target in CDH patients.

- This work was supported by grants from the MICH, MMSF, Molly Towell, GFT surgeons and Thorlakson Foundation.

PO-0756 CRICOID PRESSURE AS AN ADJUNCT TO NEONATAL INTUBATION: A NATIONAL SURVEY

RF Power, JFA Murphy. *Neonatology, National Maternity Hospital, Dublin, Ireland*

10.1136/archdischild-2014-307384.1395

Background and aims Although widely documented for use in adult intubation, there is paucity of literature available on the application of cricoid pressure (CP) during neonatal intubation. It is briefly mentioned in the NRP guideline, as a possible adjunct measure. This study was mounted to determine how widely the technique is used by paediatricians and neonatologists in clinical practice.

Methods A questionnaire was devised, consisting of eight questions. The questionnaire was distributed nationally to 40 consultant paediatricians/neonatologists, 31 specialist registrars, 40 neonatal nurses, midwives and ANNPs.

Results The overall response rate was 76% (n = 84). Findings summarised in table 1

Abstract PO-0756 Table 1 Cricoid survey findings

Parameter	No. Respondents (n = 84) (%)
Perform intubation	54 (64.3)
Assist in intubation	29 (36)
Familiar with CP	82 (97.6)
Feel that CP improves visualisation of the glottis	70 (83.3)
Feel that CP aids opening of the vocal cords	16 (19)
Feel that CP facilitates intubation	40 (47.6)
Aware of CP complications	63 (75)

Conclusions · Almost all the healthcare professionals surveyed were aware of the cricoid pressure technique.

· The majority felt that cricoid pressure has a role in improving glottis visualisation.

· One half found that it facilitated intubation.

· A minority felt that it helped to open the vocal cords during intubation.

· The high response rate provides an accurate reflection of neonatal intubation practice in Ireland.

PO-0757 PERINATAL FACTORS IN THE DEVELOPMENT OF BRONCHOPULMONARY DYSPLASIA

S Aparici, A Riverola, N Torre, A Alarcon, J Moreno, M Iriondo. *Neonatology, Hospital Sant Joan de Déu, Barcelona, Spain*

10.1136/archdischild-2014-307384.1396

Background and aims Aetiology of BPD is multifactorial with prenatal and postnatal factors being involved. First, we aimed to evaluate the association between chorioamnionitis and BPD. Secondly, the effect of other perinatal factors on the risk of developing BPD were analysed.
Methods Retrospective analysis of all infants with GA <32 weeks or BW <1500 g. admitted into our hospital between 2002–2010. 120 patients who died before 36 weeks of PMA were excluded.
Results The average GA was: 29,7 ± 3 s; 217/432 (50%) had any type of chorioamnionitis (histological or clínical); 75/432 (17.4%) met diagnostic criteria for BPD at 36 weeks.

Univariate analysis: lower GA, any type of chorioamnionitis, DAP and duration of mechanical ventilation (MV) were associated with an increased risk of DBP ($p < 0.05$).

Multivariate analysis: administration of antenatal steroids or chorioamnionitis did not independently modify the risk of BPD. But adding both, the effect became statistically significant protective for BPD (OR 0.52, 95% CI 0.03 to 0.79).

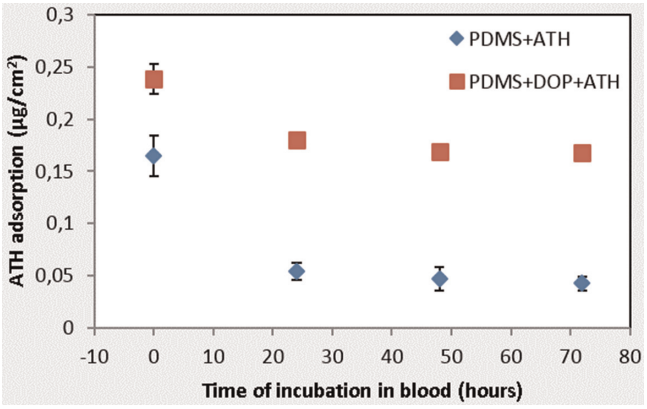
Days in MV is the only factor that independently increased the risk of BPD. Neither a lower GA nor the presence of PDA had significantance; but, the risk of BPD was higher in the presence of PDA and MV together: every day in MV increased the risk of BPD (OR 1.130, 95% CI1.001- 1.27).
Conclusions Chorioamnionitis in coexistence with antenatal corticosteroids decreases the risk of BPD. Mechanical ventilation is the main risk factor for BPD. In the presenceof DAP, ventilation increases the risk of BPD.

PO-0758 LARYNGEAL MASK AIRWAY DEVICE PLACEMENT IN NEONATES

[1]A Wanous, [2]A Wey, [2]K Rudser, [3]K Roberts. *[1]Biological Sciences, University of Minnesota, Minneapolis, USA; [2]Biostatistics, University of Minnesota, Minneapolis, USA; [3]Neonatology, University of Minnesota, Minneapolis, USA*

10.1136/archdischild-2014-307384.1397

Background Endotracheal intubation (EI) is currently required for surfactant administration. However, EI is associated with adverse physiologic effects, including bradycardia and hypoxia. The laryngeal mask airway (LMA) may provide a more practical and less invasive alternative to EI for surfactant administration.
Aim Determine feasibility of LMA placement in neonates by investigating the time, number of attempts and physiologic stability during placement of the device.
Methods Infants ≥1250 g who required surfactant administration were eligible. Videotape of the LMA placement procedure was reviewed to determine number of attempts, duration of attempts, total procedure time, and heart rate and oxygen saturation change from baseline.
Results Twenty-two infants were included in analysis. Mean total procedure time was 129 seconds (±187). Duration of attempts was 59 seconds (±81). Successful placement was achieved on the first attempt in 73% of cases. Two attempts were required in 14% of cases and all procedures were successful in ≤3 attempts. As compared to baseline, heart rate increased 3 beats per minute on average (±4, range: -3 to 11) and oxygen saturation decreased by 7% on average (±8, range: -24 to 1), as shown in Figure 1.



Abstract PO-0758 Figure 1

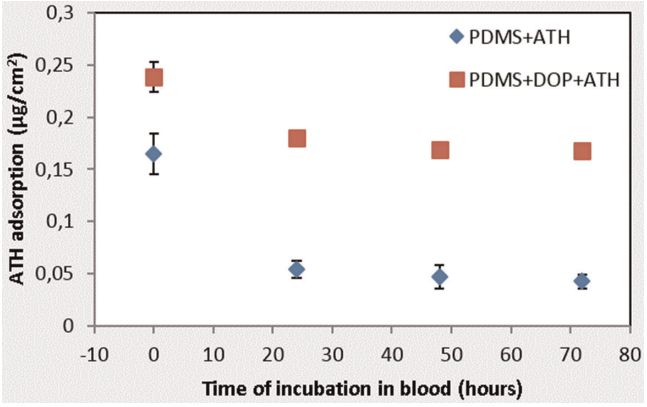
Conclusions Successful placement was achieved in the majority of patients in one attempt with an average total procedure time of approximately 2 min. Physiologic parameters were maintained close to baseline with minimal fluctuation in heart rate and oxygen saturation. Placement of the LMA device is feasible in neonates.

PO-0759 SURFACE MODIFICATION OF A POLYDIMETHYLSILOXANE MICROFLUIDIC OXYGENATOR WITH DOPAMINE AND A COVALENT ANTITHROMBIN-HEPARIN COMPLEX FOR THE PREVENTION OF THROMBOSIS

[1]J Leung, [2]L Berry, [3]N Rochow, [4]R Selvaganapathy, [2]A Chan, [1]J Brash, [3]C Fusch. *[1]School of Biomedical Engineering, McMaster University, Hamilton, Canada; [2]Thrombosis and Atherosclerosis Research Institute, McMaster University, Hamilton, Canada; [3]Pediatrics, McMaster University, Hamilton, Canada; [4]Mechanical Engineering, McMaster University, Hamilton, Canada*

10.1136/archdischild-2014-307384.1398

Introduction Prematurely born infants suffer respiratory insufficiency, our lab has developed a novel microfluidic oxygenator with polydimethylsiloxane (PDMS) gas transfer membranes to provide respiratory support. The objective of the work reported here was to modify the PDMS surfaces with a covalent antithrombin-heparin (ATH) complex to prevent coagulation



Abstract PO-0759 Figure 1 ATH desorption into blood from PDMS-ATH and PDMS-DOP-ATH surfaces