HYPOTHERMIA A RISK FACTOR FOR RESPIRATORY DISTRESS SYNDROME IN PREMATURE INFANTS?

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Background Hypothermia is generally thought to be a risk factor of respiratory distress syndrome (RDS) in premature infants. However, previous studies have primarily investigated the association between hypothermia and death.

Aim To investigate the association between body temperature and severe RDS.

Methods The study population consists of all infants born before 32 weeks of gestation and admitted to the neonatal intensive care unit (NICU), Aalborg University Hospital, Denmark April 1997 and December 2011. Rectal temperature was measured at admission. Severe RDS was defined as the need for surfactant treatment or death within the first 3 days of life in premature infants born before 32 weeks gestation. Data were provided by national registries and will be analyzed with logistic regression while adjusting for confounders, gestational age, time from delivery to admission, asphyxia and a proxy variable for fetal growth restriction.

Results Preliminary results from 593 infants show that 64% (n = 381) had hypothermia (< 36.5°C), 33% (n = 197) had arectal temperature within the normal range (36.5°C - 37.5°C) and 3% (n = 15) had hyperthermia (> 37.5°C). The unadjusted odds for need for surfactant if hypothermic were almost twice the odds in normothermic newborns at admission (OR 1.92 95% CI: 1.34 - 2.76). Further analyses are ongoing and refined results will be presented.

Conclusions In very preterm neonates the unadjusted odds of severe RDS was at least two times higher if they had hypothermia at admission compared to those with normothermia.

USE OF A NEW-GENERATION ELECTRONIC MICROPUMP NEBLISER TO DELIVER BUDERSONIDE IN CHRONIC LUNG DISEASE: A FEASIBLE ALTERNATIVE TO SYSTEMIC DEXAMETHASONE?

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Background and aim Inhaled corticosteroids reduce lung inflammation in chronic lung disease (CLD) and may be safer than systemic dexamethasone treatment, but evidence of better efficacy is lacking. State-of-the-art aerosol delivery systems may permit enhanced alveolar steroid delivery compared with traditional metered-dose inhalers/spacers or jet nebulisers. We evaluated a new-generation electronic micropump vibrating-mesh nebuliser for topical airways delivery of budesonide in infants with severe CLD requiring nasal high-flow respiratory support.

Methods We reviewed our unit’s clinical experience of delivering budesonide via the Vapotherm ventilation circuit to infants with established CLD using the Aeroneb Pro-X (Aerogen, Ireland) nebuliser.

Results 7 babies with severe CLD received nebulised budesonide since 2013. Median (range) birth gestational age was 26.9 (23.1 – 27.7) weeks, birthweight 720 (490 – 850) g. Nebulisation commenced at age 62 (29 – 104) days postnatal, by which time 6 babies had accumulated 33 (10 – 49) days’ systemic dexamethasone. Initial budesonide dosage was 0.5 mg/dose administered 2–4 times/day. Duration of nebulisation prior to discharge/back transfer was 55 (9 – 69) days. Nebulisation permitted successful weaning from dexamethasone within 8 (0 – 20) days in 6 babies and obviated the need for systemic dexamethasone in another. After starting nebulisation, no baby needed a subsequent oral dexamethasone course before discharge/back transfer.

Conclusion Use of a new-generation electronic micropump nebuliser for topical airways budesonide delivery to nasopharyngeal, high-flow dependent infants is feasible and may avoid the need for systemic dexamethasone. The comparative safety and efficacy of this new technology for steroid delivery to ventilatory supportive-dependent CLD babies should now be formally examined in clinical trials.
University Hospital and during 2010–2013 in other Finnish University Hospitals (Helsinki, K uopio, Tampere, Turku). DNA samples were genotyped using the Illumina HumanCoreExome BeadChip consisting of approximately 550,000 single-nucleotide polymorphisms (SNPs); after quality control, 60 cases (moderate-severe BPD) and 114 controls (no or mild BPD) remained for a genome-wide association study (GWAS). In the next step, approximately 200 SNPs showing suggestive signals are genotyped in additional infants (n = 116/232) to determine which associations are replicated.

Results In GWAS, we detected suggestive association signals (p < 1×10−5) for several SNPs; many of these SNPs were located within or near genes that can be considered as plausible candidate genes for BPD (e.g. the CRP and PTPN6 genes encoding C-reactive protein and protein-tyrosine phosphatase SHP-1, respectively). Some of the SNPs showing suggestive associations in two previous GWASs of BPD showed weak associations (e.g. those within the PALM2 and CTNNA3 genes).

Conclusions In genome-wide association study of BPD, we detected several suggestive associations. These initial results require verification in subsequent studies, including replication in additional populations and functional studies of the arising candidate genes.

**PO-0746** RESPIRATORY SUPPORT IN TERM NEWBORNS AFTER C-SECTION

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**Background and aims** After c-section term newborns are at risk of respiratory problems. Whereas some newborns require respiratory support only for a short time in the delivery room (DR), others are admitted to the NICU for prolonged therapy. Our aim was to compare differences between newborns with respiratory support in DR only and those admitted to the NICU.

**Methods** Retrospective analysis of video recorded DR-management of term newborns born between January 2012 and November 2013 via c-section.

**Results** 368 newborns were analysed with 82 (22%) receiving respiratory support. From them, 26 (32%) were transported to NICU for further treatment, the remaining 56 (68%) were stabilised after a short period of CPAP treatment. There were no demographic differences between both groups. CPAP-administration started after a median of 3.4 (0.2–27) in NICU and 3.7 (0.03–17) minutes in DR infants. At the start of CPAP administration infants had a median heart rate of 161 (75–195) in NICU and 153 (56–200) in DR newborns and SpO2 of 69 (41–100) and 80 (55–100) respectively (p = 0.01). 8 (31%) NICU and 15 (27%) DR newborns received a sustained inflation; mechanical ventilation via face-mask received 4 and 6 newborns respectively. In infants remaining in the DR respiratory support was stopped after a median of 7.6 (0.2–21) minutes, infants were transferred to the NICU after a respiratory support of 17.7 (4–29.6) minutes respectively.

**Discussion** Except for lower SpO2 values there are no parameters to predict the need for the length of treatment in respiratory depressed term newborns.

**PO-0747** THE STUDY OF OXIDATIVE STRESS AT PRETERM NEWBORNS WITH RESPIRATORY DISTRESS SYNDROME

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**Aim** The diseases of newborns which involve oxidative stress are: respiratory distress (RDS), bronchopulmonary dysplasia, respiratory distress and necrotizing enterocolitis. The aim of the study was to evaluate the oxidative stress trough the lipid peroxidation at preterm newborns with RDS.

**Material and methods** We conducted a prospective, non –randomised study. The study group was represented by sixty preterm newborns with RDS. The control was represented by 20 healthy late preterm newborns. For all patients family’s consent was obtained. The study of the oxidative stress was performed by the measurement of malondialdehyde (MDA) by Satoh’s method. For each newborn we determined the MDA on the first and third day of life. For the control was carried out one determination on the first day of life. The statistical analysis was done using the SPSS program.

**Results** The RDS was present in mild form at 35% newborns, medium form at 42% and severe form at 23%. Seven newborns presented neonatal septicemia. Cerebral haemorrhage was present at 12 newborns of the study group. At 13 preterm the
PO-0744 Genome-wide Association Study Of Bronchopulmonary Dysplasia

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