

Aim To investigate the association between elective caesarean sections and neonatal respiratory morbidity and the importance of timing of elective caesarean sections.

Methods Cohort study with prospectively collected data of all elective Caesarean sections on mothers with a gestational age of 37+0 weeks and more, that were performed in our Hospital from 1 January 2011 to 1 January 2012. Multiple pregnancies, fetuses with congenital anomalies, intrauterine deaths, and emergency Caesarean sections were excluded. Primary outcome measures of neonatal respiratory morbidity included transient tachypnoea of newborn, respiratory distress syndrome, persistent pulmonary hypertension of newborn, serious respiratory morbidity (oxygen therapy for more than two days, nasal continuous positive airway pressure).

Results 568 infants were delivered by elective caesarean section. Compared with newborns intended for vaginal delivery, an increased risk of respiratory morbidity was found for infants delivered by elective caesarean section at 37+0 weeks' gestation to 37+6 weeks (odds ratio 3.8, 95% confidence interval 2.4 to 6.5), 38+0 weeks' gestation to 38+6 weeks (3.0, 2.1 to 4.3), and 39+0 weeks' gestation (1.9, 1.2 to 3.0). The increased risks of serious respiratory morbidity showed the same pattern but with higher odds ratios: a fivefold increase was found at 37 weeks (5.0, 1.6 to 16.0).

Conclusions Infants born by elective caesarean delivery at term are at increased risk for developing respiratory disorders compared with those born by vaginal delivery. A significant reduction in neonatal RDS would be obtained if elective caesarean delivery were performed after 39 + 0 gestational weeks of pregnancy.

1785 BRONCHOALVEOLAR LAVAGE IN THE TREATMENT OF MECONIAL ASPIRATION SYNDROME

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Background and Aims This study was set up to compare two forms of bronchoalveolar lavage (BAL). Lavage with diluted surfactant in saline, and lavage with saline only.

Methods Fifteen term neonates with severe meconial aspiration syndrome (MAS) (needing mechanical ventilation in the first hour and inspiratory oxygen fraction more than 30%) were divided into two groups: I group (surfactant group, n=8) treated with BAL using diluted surfactant (6mg/ml), and II group (saline group, n=7), treated with BAL using saline. Both groups were treated with surfactant after BAL.

Results Mean gestational age, Apgar score in the first and the fifth minute, and birth weight did not differ significantly between groups (p>0.05). Duration of mechanical ventilation did not differ between groups (12.5 days vs 17.29; p>0.05), as well as the length of mean length of oxygen therapy (I group 6.57 days and 4.57 II group, p>0.05). Also, there was no significant difference in the length of hospital stay (12.5 days vs 17.29; p>0.05).

Conclusion Diluted surfactant BAL and saline BAL in the first hours of life combined with a dose of surfactant have the same effect on the length of mechanical ventilation length of oxygen therapy and length of hospital stay.

1786 CHANGE IN EXPRESSION OF PENTRAXIN3-MRNA IN INFECTIOUS FETAL LUNG TISSUES RELATED WITH PREMATURE RUPTURE OF MEMBRANES

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To explore the change in the expression of pentraxin 3 (PTX3)-mRNA and its clinical significance in fetal lung tissues with intrauterine infection related to premature rupture of membranes (PROM).

1. From Oct.2010 to Oct.2011, a total of 12 cases of fetal death, stillbirth, abortion or miscarriage of fetal lung specimens were assigned to this study. Fetal lung samples were divided into two groups according to with or without intrauterine infection related to PROM.
2. Fetal lung tissue specimens were fixed with 4g/L of paraformaldehyde and paraffin embedded within 2h, 4mm serial section, and then HE staining. Light microscope was used to identify whether infection/inflammatory response existed in fetal lung tissues or not. Total RNA samples from fresh lung tissue were reverse transcribed into Cdna. Glyceraldehyde-3-phosphate (GAPDH) was used as reference gene. qRT-PCR and relative quantitative analysis method were performed to detect the expression of mRNA in lung tissue in two groups. Relative expression of Mrna in two groups were compared by Δ Ct method of relative quantification.

The results showed that:

1. There was a larger number of neutrophil infiltration, red blood cells leakage, viscous liquid and inflammatory cell exudation in fetal lung tissues of study group.
2. Study group displayed higher expression of PTX3-mRNA than in control group (5.77±0.68 vs. 4.71±0.40, p=0.002).

Conclusions The expression of PTX3-mRNA was significantly increased in fetal lung tissues with intrauterine infection related with PROM, which can be regarded as a sensitive index for the early diagnosis of fetal intrauterine infection when PROM exists.

1787 MEASURING EXHALED CO₂ DURING MASK VENTILATION OF PRETERM INFANTS AT BIRTH; A NOVEL TOOL FOR ASSESSING LUNG AERATION?

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Background Positive pressure ventilation (PPV) remains the cornerstone of respiratory support after birth. Although, gas going in and out of the lung can be measured with a respiratory function monitor, gas exchange (or effective ventilation) may only be determined by presence of exhaled CO₂.

Aim To identify non-invasive clinical tools to assess lung aeration in infants receiving PPV after birth.

Methods Deliveries of preterm infants < 32 weeks gestation were attended. During PPV we measured airway pressures, gas flow and tidal volume (V_T), exhaled CO₂, heart rate and oxygen saturation. We compared delivered V_T and heart rate before and after exhaled CO₂ was measured.

Results In 10 preterm infants exhaled CO₂ and respiratory functions were recorded; their mean (SD) birth weight and gestational age was 27 (2) weeks and 902 (287) grams, respectively. A median (IQR) of 23 (17–43) inflations was delivered with no exhaled CO₂. The median (IQR) V_T when no CO₂ was measured was 1.9 (1.0–3.8) mL/kg compared to 8.3 (2.1–10.3) mL/kg when exhaled CO₂ was measured (p<0.0025). The mean (SD) heart rate while no CO₂ was exhaled was 61 (6) beats per minute compared to 104 (41) beats per minute 60 seconds after CO₂ was measured.

Conclusion Delivered V_T and heart rate was significantly lower when no CO₂ was exhaled. The presence of exhaled CO₂ was accompanied by increases in HR. Combined V_T measurements, changes in heart rate and detection of exhaled CO₂ may provide information on lung aeration of infants transitioning after birth.

1788 EFFECT OF PATENT DUCTUS ARTERIOSUS (PDA) & RESPIRATORY SUPPORT ON OXYGEN SATURATION IN PRETERM BABIES?

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Background Oxygen saturations in premature babies are targeted between 91–94%. However presence of a PDA and respiratory support have been attributed to fluctuations in oxygen saturations.

Aim To study the effect of PDA and respiratory support on frequency and duration of desaturations in premature babies.

Methods Babies <32 weeks' gestation admitted to the tertiary level neonatal unit were included in this prospective study. Saturations were recorded using the Masimo® pulse oximeters that recorded data every 2 seconds. The data was downloaded and analysed using SPSS® version 19. Babies were divided into 4 groups based on the presence of a PDA (>1.5 mm) and respiratory support (ventilation/CPAP) (Table 1).

Results Thirty six (~6 hour each) recordings were made and ~500,000 records captured.

In babies with a PDA the duration of desaturations was significantly longer.

Babies on respiratory support had significantly lower saturations and also significantly longer periods of saturation < 90% or < 86%.

Abstract 1788 Table 1: Pulse oximetry data in four study groups

Study group	No. of measurements	Saturation: Mean(SD)	Dips/hr: Mean(SD)	Average duration of dips (sec): Mean(SD)	Sats<90 (% of recording duration) Mean(SD)	Saturations< 86% (% of recording duration)	Pulse rate: Mean(SD)
(1) PDA+ Resp. support +	117,000	92.60 (2.16)	14.04 (12.67)	30.50 (12.16)	14.7(12.4)	6.8(7.7)	153(14)
(2) PDA+ No resp. support	97,000	95.49 (1.79)	11.77 (7.90)	24.50 (10.95)	4.8(8.9)	1.8(3.4)	147(11)
(3) No PDA Resp. support +	64,800	93.64 (3.08)	22.40 (26.30)	14.17 (8.38)	14.9(17.3)	5.7(7.8)	147(16)
(4) No PDA No resp. support	169,200	94.07 (2.22)	36.51(1 (9.53)	12.07 (6.08)	8.5(9.1)	2.8(4.0)	154(5)

Conclusions In babies with PDA the desaturation episodes are significantly longer but the saturations are consistent.

Babies on respiratory support have lower saturations and frequent fluctuations in saturations as compared to babies not on any support.

1789 BRONCHOALVEOLAR INTERLEUKIN-1 BETA: A MARKER OF BACTERIAL BURDEN IN LONG TERM MECHANICAL VENTILATION NEWBORN WITH VENTILATOR-ASSOCIATED PNEUMONIA

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Objective To assess the relationship between concentrations of bronchoalveolar cytokines and bacterial burden (quantitative bacterial count) in long term mechanical ventilation newborn with a presumptive diagnosis of ventilator-associated pneumonia.

Interventions According to the time course of ventilator-associated pneumonia at the time of study with bronchoalveolar lavage, 44 newborn were divided into two subgroups: referral (n=18), and treated (n=26) ventilator-associated pneumonia. Bronchoalveolar lavage was performed in the most abnormal area on chest radiograph by fiberoptic bronchoscope. Bronchoalveolar lavage fluid was processed for quantitative bacterial culture. The concentrations of

bronchoalveolar lavage cytokines (tumor necrosis factor-alpha, interleukin-1 beta, interleukin-6) also were measured.

Measurements and Main Results 26 patients had a positive bacterial culture (bronchoalveolar lavage > or = 10 colony-forming units/mL), and made up 79% of pathogens recovered at high concentrations. The concentrations of bronchoalveolar lavage interleukin-1 beta were 200.4 +/- 22.4 and 44.8 +/- 14.2 pg/mL (mean +/- se) in the newborn with positive and negative bacterial culture, respectively (p<0.001). Bronchoalveolar lavage interleukin-1 beta was significantly higher in the newborn with a high bacterial burden (p<0.001), with mixed bacterial infection (p<0.001), and with ventilator-associated pneumonia (p<0.001), compared with values in patients without these features.

Conclusions Since the concentration of bronchoalveolar lavage interleukin-1 beta was correlated with bacterial burden in the alveoli, it may be a marker for progressive and ongoing inflammation in long term mechanical ventilation newborn.

1790 OXIDATIVE STRESS AND CLINICAL OUTCOME OF PRETERM INFANTS RESUSCITATED WITH DIFFERENT CONCENTRATIONS OF OXYGEN

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Background and Aims Preterm infants are more sensitive to oxidative stress than older humans. Hyperoxic exposure, although essential for survival of neonates, induces excessive production of reactive oxygen metabolites which could be responsible of morbidities in these babies. Aims of this study were to evaluate the incidence of mortality and bronchodysplasia in preterm infants resuscitated at birth with different concentrations of oxygen. Secondary outcome was to evaluate the serum level of oxidative stress markers in the same population of infants.

Methods A randomized clinical trial has been performed in NICU of University of Messina, Italy.

Results 60 preterm infants (gestational age < 32 weeks) were recruited and randomly divided into three groups (40%, 60% and 100% of fractional inspired oxygen). We didn't find difference in mortality (p 0,877), but bronchodysplasia was represented only in the group of 100% oxygen (p<0.01). These newborns had also a longer time of ventilation (p 0,001) and hospitalization (p 0,007) and a higher incidence of pneumothorax (p<0.01). Serum levels of Interleukin-1β and nitrosylated protein were higher in preterm infants resuscitated with 100% oxygen in comparison with the other two groups of infants, which instead presented a significant reduction of interleukin-10 levels.

Conclusions In our study, the exposure of preterm infants to higher oxygen concentrations at birth is correlated with poor respiratory outcome without influencing neonatal mortality. Imbalances between pro- and anti-inflammatory cytokines may therefore be early indicators of developing chronic lung disease.

1791 COMPARISON BETWEEN HELIOX AND STANDARD OXYGEN-AIR MIXTURE FOR AEROSOLIZED ALBUTEROL SULFATE DELIVERY UNDER NEONATAL MECHANICAL VENTILATION CONDITIONS-IN VITRO STUDY

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