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TEMPERATURE UNDER RADIANT INFANT WARMER: IS IT INFLUENCED BY THE UTILIZED DEVICE?

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Objective: At birth, infants needing neonatal resuscitation are positioned under a radiant infant warmer (RIW) at 37°C. We aimed to evaluate the performance of three different RIWs in a delivery room setting.

Methods: Temperatures were measured (Incu Fluke Biomedical, Bio-Tek Instruments, Everett, WA, USA) under 3 RIWs: (a) GE Healthcare PANDA i-RES, (b) Draeger Babytherm 8010 and (c) Fisher & Paykel IW 930. Measurements were obtained at baseline, at 10 and 20 minutes after switching the power from 0 to 100% and maintaining the setting temperature constant at 24°C.

Results:

RIW	(a)	(b)	(c)	Anova
Baseline	23.53± 0.06	24.10± 0.36	23.86± 0.47	0.21
10 minutes	4.73± 1.10	31.76± 0.65	37.46± 0.95	< 0.01
20 minutes	41.26± 0.25	35.30± 0.20	42.80± 0.20	< 0.01

[Table 1]

Conclusions: Temperature under RIW is significantly influenced by the utilized device. This aspect would be considered for management of neonates at birth.

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BORN AT 32-36 WEEKS - IS THIS A PROBLEM?

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Aim: To describe morbidity and mortality for infants born with GA 32-36 weeks in a Danish County.

Material and methods: Included were all infants with GA 32-36 weeks, born 2000-2006 and admitted to the neonatal unit at Hospital Lillebaelt. Data is from "Neobase" with data on treatment for all

admissions. Further data on survival by the end of 2009 was included. Total births in the county were 32339.

Results: The study included 1252 infants. Prevalence of births 32-36 weeks was 39 pr 1000 births. 447 infants (36 %) were from a multiple pregnancy. Twenty infants (1.6 %) died, 14 within the first week, 3 within 40 days and 3 within 6 months. The majority of infants (17, 85%) died with major congenital malformations.

More than half of the infants were delivered by Caesarean section (640, 51%). 465 infants (37%) were treated with CPAP and 346 for more than 1 day. Fifty-one infants (4%) received surfactant treatment and 6 of these died. 467 infants (37%) received treatment for hypoglycemia and 289 needed glucose infusion. NEC was suspected clinically in only 1 infant.

Conclusions: 3.9 % of all newborns in the population were admitted to the neonatal unit for treatment for moderate preterm birth. Infants born within GA 32-36 often need respiratory support. Mortality is much lower than for infants born with GA < 32 weeks, where a similar study from the "Neobase" showed a mortality of 11%, but higher than for term born infants. Mortality is mainly due to congenital malformations.

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USE OF THERAPEUTIC SURFACTANT LAVAGE IN A PRETERM INFANT WITH MASSIVE PULMONARY HEMORRHAGE

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Introduction: Pulmonary hemorrhage (PH) is a potentially life-threatening complication occurring in 10-16% of extremely low birth infants (ELBW), leading to chronic lung disease in 60% of cases. Surfactant is mainly used for early management of respiratory distress syndrome in preterm infants. Recently, therapeutic surfactant lavage with diluted surfactant has been proposed for the management of infants suffering from severe meconium aspiration syndrome (MAS).

Case presentation: We report a case of a preterm infant (26 weeks GA) presenting with recurrent pulmonary hemorrhage in whom we performed a therapeutic lavage with diluted surfactant after an acute episode of massive bleeding with severe intractable hypoxemia. Repeated small aliquots of diluted surfactant (10 x 2 ml) allowed for marked improvement in oxygenation allowing to reduce mean airway pressures during high frequency oscillatory ventilation rapidly. The infant showed further progressive improvement allowing switching from HFOV back to conventional ventilation and finally extubation within 25 days.

Conclusion: Bronchoalveolar lavage with diluted surfactant might be beneficial in massive pulmonary hemorrhage in infants. Further investigations are needed to clarify the potential benefit of such a therapeutic intervention on outcome of infants suffering from life-threatening PH.

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DIFFERENT GAS FLOW RATES AND EFFECTS ON TIDAL VOLUME AND MASK LEAK DURING POSITIVE PRESSURE VENTILATION

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Aim: Observing the effects of changing gas flow rates during positive pressure ventilation (PPV) on Peak Inflating Pressure (PIP), Positive End Expiratory Pressure (PEEP), expiratory tidal volume (V_{Te}) and mask leak.

Methods: Twenty neonatal staff members of The Royal Women's Hospital were asked to deliver PPV to a modified manikin. *Experiment 1:* PPV was delivered for four minutes continuously with a set PIP 30 cm H₂O and PEEP 5 cm H₂O. Each minute the gas flow rate was increased from 5 to 8, 10, and 15 L/min. Neither PIP nor PEEP was adjusted

during PPV. The same initial settings were used in *experiment 2*. However, PIP and PEEP were readjusted after each gas flow rate change.

Results: Results are given in median (IQR).

Experiment 1: with gas flow rate increments of 5, 8, 10 and 15 L/min the V_{Te} decreased significantly from 10.0 (8.5-11.4), 6.3 (3.9-7.4), 3.4 (0.7-5.4) to 0.8 (0-1.7) mL/kg, ($p=0,000$). Mask leak increased from 14 (5-47)%, 46 (20-79)%, 79 (39-98)% to 98 (91-100)%, ($p=0,000$).

PIP showed a slight increase with the increasing gas flow rates to 35.6 (33.7-37.0) cm H₂O at 15 L/min. PEEP increased significantly to 26.4 (24.5-27.4) cm H₂O at 15 L/min.

Experiment 2: There was no significant difference in delivered V_{Te} ($p=0.42$) or mask leak ($p=0.51$) with changing gas flow rates.

Conclusion: Changing gas flow rates during PPV effected V_{Te} delivery, mask leak and airway pressures. It is therefore advisable not to alter the gas flow rate during resuscitation.

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RETINOPATHY OF PREMATURE SCREENING AND STRESS IN PRETERM INFANTS

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Aims: Retinopathy of Prematurity screening of the preterm infant is potentially a stressful procedure. In this study, we attempted to quantify the degree of stress caused by this examination using the Med-Storm Pain Monitor (Advantech). This monitor measures the changes in skin conductance secondary to sweat released by sympathetic neuron firing using electrodes placed on the skin. Each firing of the neurons is followed by a conductance peak. The monitor records the rate of firing of the neurons per second.

Methods: Preterm infants undergoing ROP screening had skin conductance rates measured using the Med-Storm Pain Monitor. Each infant's skin conductance rate was measured using electrodes applied to the sole of the foot. The conductance rates were measured at baseline