OXYGEN SATURATION MONITORING AT BIRTH: FEASIBILITY OF THE 2010 NEONATAL RESUSCITATION GUIDELINES

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Background The 2010 Neonatal Resuscitation Guidelines recommend preductal transcutaneous oxygen saturation (SpO₂) monitoring at birth.

Objective To verify the feasibility of SpO₂ monitoring at birth by determining the time to get the first SpO₂ value using a pulse oximeter.

Methods The study included 100 healthy newborns at term by elective caesarean section (Elective CS, 50 neonates), vaginal delivery (VD, 32 neonates) and emergency caesarean section (Emergency CS, 18 neonates). A Masimo Radical-7 (Masimo, Irvine, CA) pulse oximeter sensor was applied on neonatal right hand noting the minute at which the first oximetry value was provided. For the comparison between the time to get the first SpO₂ value and elective cesarean section (Elective CS, 50 neonates), vaginal delivery (VD, 32 neonates) and emergency cesarean section (Emergency CS, 18 neonates).

Results The first minute after birth is critical for Apgar score and neonatal resuscitation. The study demonstrated that SpO₂ is not always rapidly measurable, especially in neonates born by VD. A change in current clinical practice is therefore required.

Conclusions The 2010 Neonatal Resuscitation Guidelines recommend preductal transcutaneous oxygen saturation (SpO₂) monitoring at birth.

THE COMPARISON OF FORKHEAD BOX M1 MRNA EXPRESSION OF LUNG TISSUES BETWEEN PRETERM AND TERM RABBITS

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Background Recent reports on Forkhead box m1 (Foxm1) of the mice provided correlations between this gene and lung maturation. However, there has been no study on human Foxm1 concerned with lung maturation. The purposes of this study are to compare the mRNA expression of SP-A, -B, -C and Foxm1 gene of preterm rabbits to that of mature term ones and to trace the relationship between Foxm1 and lung maturation.

Methods Pregnant New Zealand White rabbits were grouped according to gestational age. The cesarean sections were carried out after the group was divided into two groups of 30–31 days of gestation (Term group) and 26–27 days of gestation (Preterm group). The numbers of fetus rabbits of each group were 18. We compared the expression levels of mRNA of SP-A, -B, -C and Foxm1 by using RT-PCR and real-time RT-PCR (qRT-PCR).

Results When relative ratio of SP-A, -B, and -C mRNA expression level of term group was 1, there were markedly decreased expressions of them in preterm group-0.380, 0.563, and 0.448 respectively in order in qRT-PCR. On the contrary to these results, Foxm1 expression was increased in preterm group and its relative expression ratio was 1: 2.166 on both RT-PCR and real-time RT-PCR (P<0.01).

Conclusion The preterm rabbits showed two times more mRNA expression of Foxm1 gene in their lungs than full terms. This Foxm1 is the gene associated for lung maturation of preterm rabbits.

MOLECULAR MECHANISMS OF PERINATAL LUNG FLUID CLEARANCE IN TERM NEWBORNS

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Background and Aim The perinatal switch from secretion to absorption in airway fluid transport includes increase in gene expression and activity of ion channels, e.g. apical amiloride-sensitive epithelial sodium channel (ENaC) and basolateral Na-K-ATPase. The serum- and glucocorticoid-induced kinase (SGK) may induce ENaC and Na-K-ATPase.

Our objective was to study airway expression of SGK1, Na-K-ATPase α1-subunit and ENaC during adaptation in term infants.

Methods 86 term infants (GA=39.4±0.91; mean ± SD) were included in the study excluding newborns with respiratory distress syndrome defined RDS. Clinical and laboratory findings established that infection was not present in the mother or infant (inclusion criteria). Infants given PA were compared to infants with RDS and no therapy [NO-PA]. A CRP measurement ≥1 mg/dL was considered elevated. SPSS was used for statistical analyses.

Results The 2nd and 3rd CRP rose in PA v. a decline in NO-PA [Table]. Tracheal aspirate and blood cultures had no growth in all subjects.

PORACTANT ALFA THERAPY ASSOCIATED WITH C-REACTIVE PROTEIN RISE

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Background and Aims French and Finnish studies report a rise in C-reactive protein (CRP) after poractant alfa [PA] therapy. We have made a similar observation. Neither study excluded perinatal infection as a cause. This research hypothesized that the rise in CRP was not caused by infection but rather by a reaction to PA.

Methods This study reviewed newborns weighing <1500 g at birth with respiratory distress syndrome [RDS] and who received PA. Clinical and radiographic criteria defined RDS. Clinical and laboratory findings established that infection was not present in the mother or infant (inclusion criteria). Infants given PA were compared to infants with RDS and no therapy [NO-PA]. A CRP measurement ≥1 mg/dL was considered elevated. SPSS was used for statistical analyses.

Results The 2nd and 3rd CRP rose in PA v. a decline in NO-PA [Table]. Tracheal aspirate and blood cultures had no growth in all subjects.