

Subjective assessment of perinatal adaptation and respiratory management in <29 weeks infants.

Background

A primary CPAP strategy is beneficial even in extremely preterm infants. Many still require intubation for stabilization. Half of those managed with primary CPAP will also require further support: surfactant administration or mechanical ventilation, and have increased risks of death or neonatal morbidities, and will require longer respiratory support. Identifying them early, during the birth stabilization process, might lead to improvements in respiratory care. A subjective classification of perinatal adaptation as Good, Bad or Marginal has been suggested but not evaluated.

Methods

Single center retrospective study of <29 weeks premature infants admitted between 01/2013 and 07/2014. Neonatal database and discharge summaries provide neonatal care and outcome data. Good perinatal adaptation (GPA) is considered for infants with good respiratory drive, tone and low oxygen requirement in the delivery room. Infants with marginal (M) PA had intermittent respiratory drive, normocardia with ventilation, and decreasing FiO₂. Bad (B) PA is considered with hypotonia, bradycardia, apnea and high FiO₂.

Results

Among 58 infants (50 inborn), 16 had GPA, 19 MPA and 23 BPA. Risk factors for bad adaptation are (not significantly different-NS) male gender, lower GA, and absent/incomplete antenatal steroid exposure. Apgar score at 1 minute increases according to perinatal adaptation quality (B3,5; M5,5 and G7,4; $p < 0,01$), with improvements at 5 minutes: 6,6; 7,0 (NS) and 8,3 ($p_{(B)} < 0,01$).

Risk of intubation in the delivery room is associated with poorer adaptation: B83%, M58% and G12% ($p < 0,01$). Primary CPAP success was not different according to groups (B 3/3; M66%; G56%). However, more infants with MPA received surfactant while on CPAP (LISA method): B 2/3; M:5/6 and G:4/7. This surfactant was given in the delivery room in 1, 4 and 2 infants respectively.

For children intubated within day 3, the duration of the first invasive ventilation duration was 29 hours (B), 15h (M) and 9h (G), NS.

Risk of early neonatal death decreases with improving perinatal adaptation: 26%, 16% (NS) and 0% ($p_B < 0,05$).

Risk of BPD at 36 weeks is not different among groups (B 19%, M13%, G 12%), but combined risk of death or BPD at 36 weeks tends to decrease (B 43%, M 31%, G 12%, $p = 0,12$).

Conclusions

Better perinatal adaptation improves chances of being initially managed with CPAP. CPAP success may be improved with less invasive surfactant therapy, especially in preterm infants with marginal adaptation. Perinatal adaptation assessment identifies mortality risk.