

NEONATAL PULMONARY RESEARCH

Is synchronized NIPPV (SNIPPV) more effective than nasal intermittent positive pressure ventilation (NIPPV) and NCPAP in treating apnea of prematurity (AOP)? A randomized cross-over trial

Background

When apnea of prematurity is not sufficiently treated by NCPAP and methylxanthines, nasal positive pressure ventilation (NIPPV) may be beneficial but it is unclear if a synchronization in SNIPPV might add some further advantages. The authors used a flow-triggered SNIPPV-device to compare NCPAP, NIPPV and SNIPPV in a cross-over design with 19 preterm infants.

Summary of results

During SNIPPV the number of bradycardias / desaturations was significantly reduced compared to NCPAP ($p < 0.001$) and NIPPV ($p = 0.009$). The number of central apnea was reduced as well during SNIPPV ($p = 0.001$). Other cardiorespiratory variables (FiO_2 , heart rate, pCO_2) remained unchanged. In most infants, NIPPV did not result in effective chest inflation during central apnea.

Strength

The well-designed study shows benefits of a synchronized non-invasive ventilator support in preterm infants. The effect seems to be clinically relevant (approximately 2.9 bradycardias/desaturations less per hour). The cross-over design diminishes confounding factors. It is interesting to see that NIPPV and NCPAP seem to have no difference in terms of desaturations or bradycardias.

Limitations

The study focuses on short term effects during the study period of four hours. Mid- and long term effects remain unknown. It would be important to pay further attention to clinically relevant end points like reintubation rate or BPD. In the future, we have to clarify if there are differences between the various trigger devices.

Practical conclusion

SNIPPV may have the edge over NIPPV and NCPAP. At the moment, evidence is missing to recommend SNIPPV as a routinely used technique, but in some critical infants it might be an option to prevent reintubation.

Gizzi C, et al. Is synchronized NIPPV more effective than NIPPV and NCPAP in treating apnoea of prematurity (AOP)? A randomized cross-over trial. Arch Dis Child Fetal Neonatal Ed 2015;100:F17–F23.

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