Indian Academy of Pediatrics (IAP)

nRICH

Newer **R**esearch and recommendations **I**n **C**hild **H**ealth

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UNDER THE AUSPICES OF THE IAP ACTION PLAN 2023

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Dear fellow IAPans,

nRICH

Newer **R**esearch and recommendations **I**n **C**hild **H**ealth-aims to bring you the abstracts of some of the breakthrough developments in pediatrics, carefully selected from reputed journals published worldwide.

Expert commentaries will evaluate the importance and relevance of the article and discuss its application in Indian settings. nRICH will cover all the different subspecialities of pediatrics from neonatology, gastroenterology, hematology, adolescent medicine, allergy and immunology, to urology, neurology,vaccinology etc. Each issue will begin with a concise abstract and will represent the main points and ideas found in the originals. It will then be followed by the thoughtful and erudite commentary of Indian experts from various subspecialties who will give an insight on way to read and analyze these articles.

I'm sure students, practitioners and all those interested in knowing about the latest research and recommendations in child health will be immensely benefitted by this endeavor which will be published online on every Monday.

Happy reading!

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Nasal high-flow therapy to Optimise Stability during Intubation: the NOSI pilot trial

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BASED ON ARTICLE

Foran J, Moore CM, Ni Chathasaigh CM, et al. Nasal high-flow therapy to Optimise Stability during Intubation: the NOSI pilot trial. Archives of Disease in Childhood-Fetal and Neonatal Edition 2023;108:244-249.

SUMMARY

The objective of the NOSI pilot study was to calculate duration of peripheral oxygen saturation below 75% during single and multiple intubation attempts in order to inform development of a larger definitive trial. NOSI was a double blind randomized controlled pilot trial conducted at a single, tertiary neonatal centre from October 2020 to October 2021. The trial included infants undergoing oral intubation in the neonatal intensive care and excluded infants with upper airway anomalies. There was 1:1 randomization to intervention or control groups using a random number table, and further stratified by gestational age (<34 weeks vs ≥34 weeks). The intervention group was assigned to receive 6 L/min of nasal high flow (NHF)(Optiflow Junior, Fisher and Paykel), FiO2 1.0, while the control group received 0 L/min of NHF. 43 infants were enrolled (26 <34 weeks and 17 ≥34 weeks) with 50 intubation episodes. Hemodynamic data was extracted from Philips Intellivue monitors. In infants <34 weeks' gestation, median duration of SpO2 of <75% was 29 s (0–126 s) vs 43 s (0–132 s) (p=0.78, intervention vs control). Median duration of SpO2 of <75% in babies ≥34 weeks' gestation was 0 (0–32 s) vs 0 (0–20 s) (p=0.9, intervention vs control). Overall, there were 24 babies with saturation <65%, 30 babies with SpO2 less than 75%, and 35 with SpO2 less than 85%. Rate of desaturation for the intervention arm was 3.4% every 10 s compared with 4.6% per 10 s for the control arm (p<0.001) for infants <34+0 weeks.

COMMENTARY

The primary objective of the NOSI study was to compare cumulative hypoxia in the groups receiving NHF vs standard care. Although, no significant differences were noted in duration of oxygen saturation below 75% between the 2 groups, the secondary outcome, rate of decline of oxygen saturation, was significant and was lesser in the intervention group. This pilot study showed that it was feasible to provide NHF during intubation attempts. Since the sample size was small, a larger study is warranted to show whether NHF shortens the duration of hypoxia and allows more time for intubation.

The SHINE (Stabilisation with nasal High flow during Intubation of Neonates) trial has already demonstrated that using NHF therapy improves the likelihood of successful intubation in the first attempt without physiological instability. In this multicentre, randomised controlled trial, 124 intubations were assigned to NHF and 127 to standard care (no nasal high flow) and 62 of 124 intubations (50.0%) in the high-flow group were successfully intubated on the first attempt without physiological instability compared to 40 of 127 intubations (31.5%) in the standard-care group (adjusted risk difference, 17.6 percentage points; 95% confidence interval [CI], 6.0 to 29.2), for a number needed to treat of 6.

Nasal high flow is already being used in adults and children to prolong apnea time during airway management. Its use is based on the THRIVE technique, which stands for transnasal humidified rapid-insufflation ventilatory exchange. Heated and humidified air is delivered via high flow nasal cannulas at a flow rate greater than patient's minute ventilation, washes out nasopharygeal dead space, enables passive oxygenation and also create distending alveolar pressure which prevents alveolar collapse. Warm humidified air also limits mucosal injury, ciliary dysfunction, infection, and patient discomfort.

Intubation is a common procedure in NICUs and babies having lower functional residual capacities are more likely to suffer hypoxia during prolonged or multiple intubation attempts. With increasing use of non-invasive ventilation, and avoidance of mechanical ventilation, the intubation skill of trainees have also reduced. NHF during intubation attempt is welcome as it provides greater physiologic stability and more time for intubation before desaturation and bradycardia. NHF is already being used in preterms as a primary mode of respiratory support for RDS and post extubation. Its use can now be extended during intubation attempt as well. It is feasible to apply NHF while intubating babies as it provides greater stability and less chance of desaturation.

REFERENCES

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