Do Pain and Physiological Stress Occur During MIST?

We read with interest the article on pain and physiological stress during minimally invasive surfactant therapy (MIST) in very preterm infants [1]. We seek the following clarifications.

It would have been better if details of success of catheterization in first or second attempt were provided. Newborns who needed a second attempt had hypoxia and/or bradycardia during the first attempt, which may affect neurological status. So, it is possible that due to this event it would affect pain score in next attempt within brief time. We understand that there would be a smaller number of newborns who needed a second attempt. More clarification is needed for where and why the independent *t* test was used and if used, is it a correct test to be applied here where there are no two independent groups?

Due to nature of the study, transient change in heart rate and SpO2 is also likely because of blockage of the airways due to surfactant [2], though less than the intubation-surfactant-extubation (InSurE) technique [3]. This adds to the total score of PIPP-R, which might be misleading. This may be considered as a limitation of utilizing PIPP-R score in this study.

Acknowledgments: Ms. Jaishree Ganjiwale from Central Research Services, Bhaikaka University, Karamsad, for help in statistical interpretation.

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REFERENCES

1. Sawant T, Manerkar S, Patra S, et al. Pain and physiological stress during minimally invasive surfactant therapy (MIST) in very preterm infants. Indian Pediatr. 2023;60:557-60.
2. Tarawneh A, Kaczmarek J, Bottino MN, Sant'Anna GM. Severe airway obstruction during surfactant administration using a standardized protocol: A prospective, observational study. J Perinatol. 2012;32:270-5.
3. Sabzehei MK, Basiri B, Shokouhi M, Ghahremani S, Moradi A. Comparison of minimally invasive surfactant therapy with intubation surfactant administration and extubation for treating preterm infants with respiratory distress syndrome: a randomized clinical trial. Clin and Exp Pediatr. 2022;65:188.
4. Dekker J, Lopriore E, Rijken M, et al. Sedation during minimal invasive surfactant therapy in preterm infants. Neonatology. 2016;109:308-1.

REPLY

We thank the readers for the interest in our article [1]. We would like to offer the following explanation:

Out of the 23 infants enrolled in the study, only two infants required a second attempt at inserting the catheter. Since the total sample size was very small, we did not analyze the pain scores in these infants separately. But there certainly exists a possibility that the pain scores might be different in infants undergoing a second attempt at MIST, and this may be explored in a larger study. We clarify that the pain scores were analyzed using the paired *t* test.

Tarawneh, et al. [2] reported observing an ETT plug after extubation post INSURE with BLES administered in aliquots, especially in the ELBW infants in their cohort [3]. This ETT plug may indicate major airway blockage. Our cohort consisted of bigger infants, and the thin catheter in MIST does not block the airways as much as the ET tube; however, there exists a possibility of blockage of airways due to surfactant that may cause changes in heart rate and SpO2. As reported previously [3], desaturation and bradycardia happen more often after INSURE compared to MIST. It is difficult to differentiate whether airway obstruction causes the changes in heart rate and SpO2 or the pain. Since these physiological parameters are an integral part of PIPP-R for pain assessment, one cannot disregard these while assigning the PIPP-R score. This could be a limitation of assessing the pain scores with PIPP-R and this aspect needs to be explored in further studies.

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REFERENCES

1. Sawant T, Manerkar S, Patra S, et al. Pain and physiological stress during minimally invasive surfactant therapy (MIST) in very preterm infants. Indian Pediatrics. 2023;60:557-60.
2. Tarawneh A, Kaczmarek J, Bottino MN, Sant'Anna GM. Severe airway obstruction during surfactant administration using a standardized protocol: A prospective, observational study. J Perinatol. 2012;32:270-5.
4. Sabzehei MK, Basiri B, Shokouhi M, Ghahremani S, Moradi A. Comparison of minimally invasive surfactant therapy with intubation surfactant administration and extubation for treating preterm infants with respiratory distress syndrome: a randomized clinical trial. Clin Exp Pediatr. 2022;65:188.