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To: Predictive factors for high-flow nasal cannula failure in patients with acute viral bronchiolitis admitted to the pediatric intensive care unit

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TO THE EDITOR,

"Predictive factors for high-nasal cannula failure in patients with acute viral bronchiolitis admitted to the paediatric intensive care unit" published on February 2025 in Critical Care Science,[1] is an interesting study and with subject matter important to general paediatric practice worldwide. I believe there are numerous interesting discussion points to be addressed.

The dataset presented in the article did not show a clear breakdown of the patient ages, which is important as outcomes may vary widely depending on patient age, for example, a younger patient with less respiratory reserve may be more prone to failure than an older patient.[1] Prematurity was not clearly defined, nor were premature patients separated by gestational age. Again, this is relevant for extreme preterm to late preterm risk factors for chronic lung disease and higher risk of respiratory disease. Furthermore, thirteen of the patients had either neurological (five patients) or cardiac (eight patients) comorbidities, which would significantly impact outcomes for these patients.[1] Our discussion suggested that these patients should be excluded from this study to reduce the confounding factors that may contribute to outcomes. However, interestingly, the majority of these patients (12 of them) were part of the success group, although this was statistically insignificant.[1]

Certain respiratory viruses, such as the respiratory syncytial virus, are associated with more severe acute viral bronchiolitis. Data analysis based on the causative virus may provide more information regarding predicted outcomes.[2] Pleural effusions were noted on three chest X-rays, which is an uncommon finding in bronchiolitis, which begs the question whether these children were correctly diagnosed with bronchiolitis or whether there was a different diagnosis. Perhaps these children should also be excluded from the study, as they are unlikely to be typical acute viral bronchiolitis.

It is interesting to note the author's specific cutoff point for high flow (12L/minute) as a predictor for increased success in acute viral bronchiolitis (AVB).[1] As the authors mentioned, high flow was commenced at 2L/kg/minute; it is unclear if 12L/minute indicated patients > 6kg or if flow > 2L/kg was associated with better outcomes. Various factors influence weight, and as a result, the flow rate, i.e., age, prematurity, and comorbidities. Although the authors discussed anatomophysiological factors impacting therapy failure in children < 5kg, our clinical practice with paediatric patients would benefit from more unmistakable evidence of treatment efficacy using L/kg compared to simply L/minute.[1]

In summary, the article presents thought-provoking learning points in managing AVB, a common presentation in paediatrics worldwide. Future research should explore further analysis of outcomes in AVB with consideration for confounding factors such as prematurity, comorbidities, and causative viral pathogens. This article portrayed a comprehensive overview of confounding factors affecting outcomes in the management of bronchiolitis that all paediatricians should consider when managing infants with AVB.

Publisher's note

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