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CORRESPONDENCE

High-flow nasal cannula flow rate in young infants with severe viral bronchiolitis: the question is still open

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Initial correspondence from Shein et al.

Dear Editor,

In the first TRAMONTANE study [1], Milési demonstrated that the rate of "failure" of subjects randomized to high-flow nasal cannulae (HFNC) at 2 L/kg/min was 50.7%, higher compared to children randomized to nasal continuous positive airway pressure (nCPAP) (31.0%). We were surprised that the failure rates observed in both HFNC arms of your recent TRAMONTANE 2 [2] were intermediate between the two rates from the earlier study. In fact, the rate of failure with HFNC observed in TRAMONTANE 2 was not statistically significant for subjects in the 2 L/kg/min arm [38.7% vs. 31.0%, $p=0.338$ (by chi-squared)], subjects in the 3 L/kg/min arm (38.9% vs. 31.0%, $p=0.326$), or among all TRAMONTANE 2 subjects (38.8% vs. 31.0%, $p=0.279$). As you state in the limitations, the differences between studies may have been influenced by changes in clinical expertise and experience using HFNC.

How do these new data and apparent changes in outcomes with HFNC affect your interpretations of the findings from the first TRAMONTANE study and, if that first study were replicated now, how confident are you that CPAP would still be found to be superior to HFNC?

Reply from Milési and Cambonie

We thank Dr. Shein and colleagues for their comment on our article [2].

Yes, we observed a lower failure rate in the TRAMONTANE 2 study than in the first TRAMONTANE study [1]. There are two elements to consider. First, 2 years separate the studies, and it is likely that clinicians gained experience with HFNC. Perhaps, they now have more confidence with this relatively new device. From this perspective, it is indeed possible that the results of the first TRAMONTANE study would not be the same if repeated. Second, the characteristics of the population included in the TRAMONTANE study indicated younger patients, with a lower weight and a slightly higher baseline pCO_2. Therefore, the populations of the two studies had similarities but were not strictly comparable. These demographic differences between the two studies can play a role in the difference observed for the main outcome because the effect of respiratory syncytial virus (RSV) on acute viral bronchiolitis (AVB) severity varies greatly depending on the age of the young infant [3].

The TRAMONTANE 2 study alone, however, cannot change the interpretation of the findings from the first TRAMONTANE study because its objective was to compare two flow rates using HFNC in infants with AVB. In order to assess if nCPAP is still superior to HFNC in this setting, we should have considered including a group treated with nCPAP.

Nevertheless, we agree: the results observed in TRAMONTANE 2 raise questions about the persistent superiority of nCPAP for the initial management of AVB. Considering the increasing use of HFNC in young infants with AVB, as well as the increasing control of the device by the clinicians, it may be clinically consistent to challenge TRAMONTANE results and run a new study comparing the two techniques in this population.

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Compliance with ethical standards

Conflicts of interest
All authors report no conflicts of interest associated with this publication.

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