High Frequency Oscillatory Ventilation versus Synchronized Intermittent Mandatory Ventilation in Respiratory Distress Syndrome

I read the article by Singh, *et al*. with great interest [1]. However, I would like to point out few issues which need clarification.

First, out of 296 infants of respiratory distress syndrome (RDS) requiring continuous positive airway pressure (CPAP), a total of 150 infants required intubation for invasive ventilation and another 53 infants requiring intubation couldn't be randomized due to non-availability of designated ventilator. This means that there was a CPAP failure in 69% of the cases. Studies from India itself had shown a much lower CPAP failure rate of around 25 to 40% despite the use of surfactant in selected cases [2, 3]. This high failure rate of CPAP raises its own set of issues: how accurately was the definition of respiratory distress syndrome (RDS) being applied? What is the policy for surfactant administration in the unit? Are these findings generalizable to settings where the rate of CPAP failure is almost half?

Second, the authors have excluded the infants which were off ventilation within 24 hours after randomization. This is despite of the fact that oxygenation index at 1 and 6 hours of ventilation was also the part of primary outcome. These infants constituted more than one fourth of the total participants in the trial and their exclusion could have resulted in biased results. What is the reason of their exclusion and how were they adjusted in the final analysis needs clarification?

Third, the information regarding the distribution of various brands of surfactant used, their doses and the total number of times the surfactant was administered in both the groups is lacking. All these factors affect the FiO_2, oxygenation and the ventilatory requirement especially in the first 24 hours of initial treatment [4,5]. Moreover, text mentions that the lower tidal volumes were targeted in synchronized intermittent mandatory ventilation (SIMV) group but its exact range in mL/kg is missing.

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REPLY

We thank the authors for their interest in our study [1]; 296 infants assessed for eligibility were cases having respiratory distress syndrome and requiring ventilation; of these, 150 infants were randomized. The remaining 146 infants could not be included because either they were excluded as per exclusion criteria, or the designated ventilator was not available, and thus, it does not reflect CPAP failure rate. The diagnosis of hyaline membrane disease was made as per working definition of NNPD of India, which includes clinical parameters, and chest radiology or negative gastric aspirate shake test.

Oxygen index (OI) was the primary outcome and it was measured at 1, 6 and 24 hours. Since significant drop-out was expected and we intended to look for longitudinal trend in OI over time on first day of ventilation, it was decided *a priori* to conduct analysis only on those infants who complete initial 24 hrs of ventilation. Moreover, the proportion of subjects who could not complete initial 24 hrs of ventilation after randomization were quite similar in both the groups (HFOV: 25.8%; SIMV: 27.3%).

As per our unit policy we administer surfactant to preterms with gestational maturity < 34 wks having respiratory distress due to HMD at earliest possible hours; however, it is used in only those who can afford it. We use Curosurf (porcine minced) for infants weighing <1000 g and Survanta (bovine minced) for those >1000 g.