Trends in Ventilation Modes in The Last Decade and Their Impact on The Incidence of Bronchopulmonary Dysplasia in Preterm Infants

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Abstract

Background: Less invasive forms of ventilation have evolved aiming to decrease bronchopulmonary Dysplasia (BPD) morbidity. It is unclear whether changes in ventilation practices have been associated with improvements in respiratory outcomes.

Objective: To examine trends of ventilation modes in preterm neonates over the last decade and their impact on BPD.

Methods: A retrospective chart review of very low birth weight infants (VLBW) and those born at less than 32 weeks gestation hospitalized during two periods: the years 2012-2013 and 2018-2019. The primary outcome was the prevalence of BPD. Study variables included the mode and duration of ventilation, duration of oxygen need, and perinatal clinical parameters.

Results: Four hundred eighty-one infants were enrolled. Between the two study periods, a significant increase was observed in invasive (33% to 47%, \( p = 0.002 \)), and non-invasive ventilation rates (44% to 72%, \( p < 0.001 \)). The average duration of non-invasive ventilation increased significantly (from 9.24 to 14.08 days, \( p = 0.016 \)). The total duration of respiratory support remained unchanged. The overall prevalence of moderate and severe BPD at 36 weeks corrected age remained approximately 40% in preterm infants born at less than 28 weeks gestation.

Conclusion: The increasing use of non-invasive ventilation was not accompanied by a reduction in the use of invasive ventilation, nor by a reduced prevalence of BPD. The high prevalence of BPD remains a significant problem in preterm infants born < 28 weeks of age. Other interventions, in addition to less aggressive ventilation, need to be explored.

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