

Early volume targeted ventilation in preterm infants born at 22-25 weeks of gestational age

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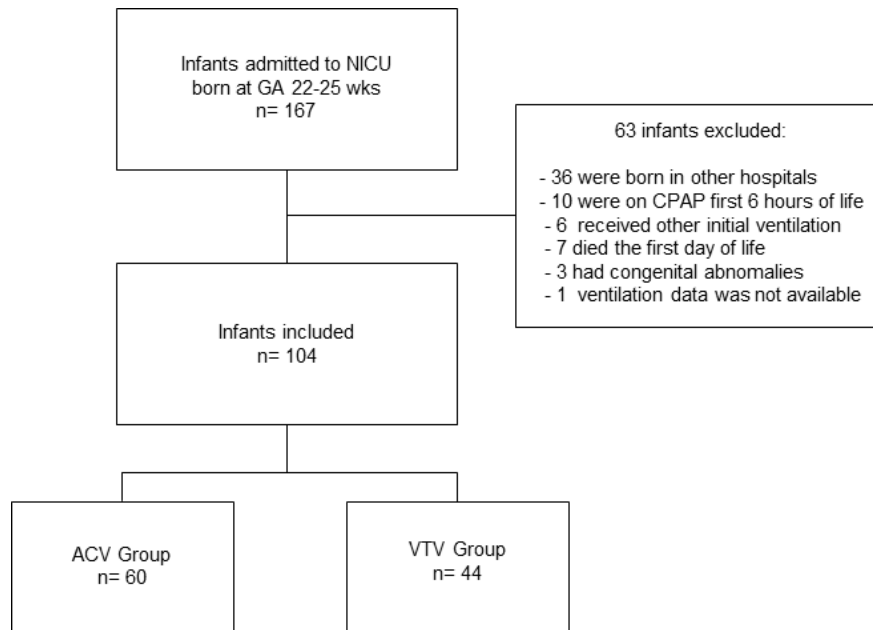
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Abstract

Background: Early hypocapnia in preterm infants is associated with intraventricular haemorrhage (IVH) and bronchopulmonary dysplasia (BPD). Volume targeted ventilation (VTV) has been shown to reduce hypocapnia in moderately preterm infants. Less is known of VTV in infants born at <26 weeks gestational age (wGA). Objectives: Our aim was to investigate the short- and long-term benefits of early VTV as compared to assist-control ventilation (ACV) in extremely preterm infants on incidence of hypocapnia, days on ventilatory support, IVH and BPD. Study Design: A retrospective observational study of 104 infants born at 22-25 wGA (24+0±1+1wGA; birth weight 619±146g), ventilated with either VTV (n=44) or ACV (n=60) on their first day of life. Ventilatory data and blood gases were collected at admission and every fourth hour during the first day of life, together with perinatal characteristics and outcomes. Results: Positive inspiratory pressure (PIP) was lower in the VTV-group than in the ACV-group during the first 20 hours of life ($p<0.05$), without any difference in end-expiratory pressure, respiratory rate or FiO₂. Incidence of hypocapnia ($\text{PaCO}_2<4.5\text{kPa}$) was lower with VTV than ACV during the first day of life (32% vs 62%; $p<0.01$). Infants in the VTV-group were more frequently extubated at 24 hours (30% vs 13%; $p<0.05$). IVH grade [?], BPD and time on mechanical ventilation did not differ between the groups. Conclusions: VTV is safe to apply in infants born at <26 wGA and was observed to have lower incidence of hypocapnia compared to infants ventilated by ACV, without any differences in outcomes.

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