

Original Article

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Lower back-up rates improve ventilator triggering during assist-control ventilation: a randomized crossover trial

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Abstract

Objective: The objective of this study is to compare the effects of back-up ventilation rates (BURs) on triggered inflations and patient cardiorespiratory stability during assist-control/volume guarantee ventilation (AC/VG).

Study Design: This study is a randomized crossover trial conducted in a neonatal unit in an Australian tertiary NICU. In all, 26 stable preterm infants on AC/VG ventilation were studied at BUR settings of 30, 40 and 50 min⁻¹. Inflation rate, triggering and cardiorespiratory measures of patient stability were compared during 20 min epochs with 10 min washout periods.

Result: The 26 infants studied were median (inter-quartile range) gestational age 27 (26, 30) weeks, birth weight 0.84 (0.75, 1.14) kg and FiO₂ 0.24 (0.21, 0.31) and age 6 (4, 19) days. At BURs of 30, 40 and 50, the proportions of inflations, which were triggered, were mean (s.d.) 85% (11), 75% (19) and 61% (25); $P < 0.01$ for all comparisons. Total delivered inflation rates were 56 (8), 58 (9) and 62 (8) min⁻¹, respectively. Cardiorespiratory parameters did not vary between the settings.

Conclusion: Using a lower BUR allows greater triggering of ventilator inflations. Cardiorespiratory parameters including CO₂ levels were stable at all rates.

Keywords: infant; newborn; ventilation; mechanical; tidal volume



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