

IMPACT OF NEUROMUSCULAR BLOCKADE ON LUNG FUNCTION DURING THE INITIAL RESUSCITATION OF INFANTS WITH CONGENITAL DIAPHRAGMATIC HERNIA

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Background and aims: Practice differs as to whether a neuromuscular blocking agent should be given routinely to infants with a congenital diaphragmatic hernia (CDH) during resuscitation on the labour ward. The aim of this study was to investigate the effect of neuromuscular blockade on lung function during the initial resuscitation of CDH infants.

Methods: A respiratory function monitor (NM3, Respironics) and a computer laptop with recording and analysis software (Spectra, Groove medical, UK) were used to collect and analyse air flow, airway pressure and tidal volume changes during resuscitation. Lung compliance was calculated from pressure-volume loops. Twenty inflations immediately before the administration of pancuronium (neuromuscular blocking agent) and twenty inflations immediately after were analysed. The study was approved by Outer North London ethics committee and parental consent was obtained for analysis of the data.

Results: Ten infants with CDH (median gestational age 37 weeks and birth weight 2855 gms) were studied, all the infants were intubated immediately after birth. Mean peak inflation pressures of 25 (\pm 0.9) cm H₂O were used during resuscitation. The median (IQR) tidal volume and lung compliance before paralysis were 5.4 (4.3-6.2)ml/kg and 0.3 (0.2-0.3) ml/cm H₂O/kg. There were significant decrease in both the tidal volume 4.5(4.1-5.8) ml/kg (p < 0.01) and lung compliance 0.2(0.1-0.3) ml/cm H₂O/kg (p < 0.01) following pancuronium administration.

Conclusion: Infants with congenital diaphragmatic hernia have low lung compliance at birth, which is further reduced by administration of a neuromuscular blocking agent.