Extubation of patients with neuromuscular weakness: a new management paradigm.

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Abstract

BACKGROUND: Successful extubation conventionally necessitates the passing of spontaneous breathing trials (SBTs) and ventilator weaning parameters. We report successful extubation of patients with neuromuscular disease (NMD) and weakness who could not pass them.

METHODS: NMD-specific extubation criteria and a new extubation protocol were developed. Data were collected on 157 consecutive "unweanable" patients, including 83 transferred from other hospitals who refused tracheostomies. They could not pass the SBTs before or after extubation. Once the pulse oxyhemoglobin saturation (Spo(2)) was maintained at > or = 95% in ambient air, patients were extubated to full noninvasive mechanical ventilation (NIV) support and aggressive mechanically assisted coughing (MAC). Rather than oxygen, NIV and MAC were used to maintain or return the Spo(2) to > or = 95%. Extubation success was defined as not requiring reintubation during the hospitalization and was considered as a function of diagnosis, preintubation NIV experience, and vital capacity and assisted cough peak flows (CPF) at extubation.

RESULTS: Before hospitalization 96 (61%) patients had no experience with NIV, 41 (26%) used it < 24 h per day, and 20 (13%) were continuously NIV dependent. The first-attempt protocol extubation success rate was 95% (149 patients). All 98 extubation attempts on patients with assisted CPF > or = 160 L/m were successful. The dependence on continuous NIV and the duration of dependence prior to intubation correlated with extubation success (P < .005). Six of eight patients who initially failed extubation succeeded on subsequent attempts, so only two with no measurable assisted CPF underwent tracheotomy.

CONCLUSIONS: Continuous volume-cycled NIV via oral interfaces and masks and MAC with oximetry feedback in ambient air can permit safe extubation of unweanable patients with NMD.
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Extubation of patients with neuromuscular weakness: a routine step or a challenging procedure? [Chest. 2010]

PMID: 20040608 DOI: 10.1378/chest.09-2144

[Indexed for MEDLINE]

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