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Title: Decannulation and NIV in tracheotomized and chronically ventilated patients

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Body: While non-invasive ventilation (NIV) is a recommended technique for weaning intubated patients after acute hypercapnic respiratory failure, little evidence exists for NIV as a technique for weaning tracheotomized patients undergoing prolonged invasive ventilation (IV). Methods: we prospectively studied a group of tracheotomized and chronically ventilated patients admitted to a weaning centre who could be suitable to decannulation and conversion to NIV because of absence of airway stenosis, normal swallowing function, preserved cough mechanism but unable to sustain a spontaneous breathing for more than 16 hours without increasing $PaCO_2$. Data collected for follow-up were: demographic, functional, severity score (SAPSII), need to re-tracheotomy, survival, hospital admissions/year, maintenance of adequate gas exchange. The Fisher exact test and the log-rank test have been employed for statistical analysis. Results: 176 patients with tracheotomy and prolonged IV were evaluated; 26 patients (14 men) met the criteria and were decannulated and converted to NIV (16 obstr. 10 restr.). Mean age was 67.46 years, mean SAPSII score was 26.8, mean follow-up time was 24.8 months; 12 patients had at least 1 new episode of exacerbation, in 5 cases requiring ICU admission, and 2 patients needed re-tracheotomy. Two years-mortality rate was 26%. Age and severity score turned out to be statistically significant predictors of survival. Conclusions: Long-term maintenance of tracheotomy and invasive ventilation makes the patient more fragile and difficult to manage in the domiciliary setting. Decannulation and conversion from IV to NIV is a safe and feasible technique and should be attempted in selected hypercapnic patients.