

Six-month nocturnal nasal positive pressure ventilation improves respiratory muscle capacity and exercise endurance in patients with chronic hypercapnic respiratory failure.

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摘要

Abstract

BACKGROUND/PURPOSE: This study was designed to investigate the effects of 6 months of nocturnal nasal positive pressure ventilation (NNPPV) on respiratory muscle function and exercise capacity in patients with chronic respiratory failure. **METHODS:** A prospective, randomized, controlled design was used. Twenty-nine patients with chronic respiratory failure were enrolled and allocated to either the NNPPV (n = 14) or control group (n = 15). Patients in the NNPPV group received bi-level positive pressure ventilation via nasal mask for 6 consecutive months. Arterial blood gas, respiratory muscle assessment and 6-minute walk test (6MWT) were performed before and after the 6-month NNPPV intervention. Respiratory muscle function was assessed using the variables of maximal inspiratory pressure (Pimax), maximal expiratory pressure (Pemax), and maximum voluntary ventilation (MVV). **RESULTS:** Subjects in the NNPPV group showed a significant improvement in blood gas exchange and increased 6-minute walk distance (6MWD) compared to baseline and the control group. The 6MWD was significantly increased from 257.1 +/- 114.1 to 345.2 +/- 109.9 m (34.3%) in the NNPPV group. NNPPV also significantly improved MVV and Pimax relative to baseline. MVV was significantly increased from 19.2 +/- 6.5 to 22.3 +/- 7.1 L/min (16.1%) in the NNPPV group (p < 0.05). Furthermore, there was a significant correlation between the magnitude of MVV improvement and 6MWD change. **CONCLUSION:** The 6-month NNPPV treatment significantly decreased the partial pressure of carbon dioxide and improved daytime respiratory muscle function, thus contributing to exercise-capacity increase in

patients with chronic respiratory failure