

EFFECT OF VAPOTHERM^R, A HIGH-FLOW HUMIDIFIED O₂ DELIVERY DEVICE, ON BREATHING IN COPD PATTERNS DURING EXERCISE. Nugent T, Vance G, Criner GJ, Chatila W. Div Pulm & Crit Care, Temple Sch of Med, Philadelphia, PA.

COPD patients (pts) have exercise limitation caused by dyspnea and ventilatory impairment. Current medical interventions to ameliorate exercise performance in COPD are disappointing, especially for severely affected patients. In this study, we examined the effects of a novel device that delivers well humidified O₂ at high flows, the Vapotherm^R (Vapo), during exercise in severe COPD. We studied 4 male pts with COPD (mean±SD; age 59±6 yrs, FEV₁ 27±5, TLC 118±14, RV 196±40 % predicted, FEV₁/FVC 27±4%) while at rest and during low level exercise on O₂ and Vapo. Pts were exercised for 12 min, first on O₂ then on Vapo. Pts rested for 15 min in between, and exercise at a constant workload on both. FiO₂ was started at the pt's known prescription and adjusted during exercise to maintain an SpO₂ > 88%, Vapo was delivered at 20 lpm at the same baseline FiO₂. An esophageal balloon was inserted in all pts to obtain work of breathing (WOB), which was recorded along with all ventilatory variables on the Bicore^R. Borg Scale, vital signs, and ventilatory variables (taken as the mean of 5 breaths at the end of each min of exercise) were recorded while on the 2 different delivery devices, and compared using two-way repeated measure ANOVA. **Results:** Two patients required FiO₂ increases while on O₂ but not on Vapo, and all 4 pts were more comfortable during exercise with Vapo. Mean arterial pressure was lower on Vapo (104±11 vs 110±11 mmHg, p=0.03), and there was a trend for the Borg scale (1.33±1.18 vs 1.98±1.74, p=0.03) and pulse rate (98±13 vs 104±15 bpm, p=0.11) to also be lower. There was no difference in WOB (2.6±0.67 vs 2.8±1.4 j/l), Ti/T (0.36±0.04 vs 0.36±0.04), f/V_T (23±7 vs 25±18), and V_E (20±6 vs 20±5 lpm) between Vapo and O₂ delivery. **Conclusion:** Vapo is an alternative O₂ delivery device that may improve exercise performance in severe O₂ dependent COPD pts.

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