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Title: Influence of ventilatory inefficiency in to limit exercise capacity in COPD patients

Dr. Iván 573 Caviedes icaviedes@alemana.cl MD [1] and Dr. Rodrigo 574 Soto rsoto955@hotmail.com MD [1].
[1] Laboratorio Broncopulmonar, Clínica Alemana de Santiago, Facultad de Medicina Clínica Alemana, Universidad del Desarrollo, Santiago, Chile, 6681920 .

Body: Background: We recently demonstrated an influence of Ventilatory efficiency (VE/VCO_2) over exercise capacity in COPD (Resp Care 2012 in press). Purpose: to demonstrate increase of ventilatory inefficiency depending on the severity of COPD, and its influence into reduce exercise capacity. Methods: 58 Gold I - III patients, mean age 61, mean FEV1: 98, 68.5 and 44.3%, mean DCO: 68, 59.5 and 45%. A cardiopulmonary stress test measuring Power (Wmax), Oxygen consumption (VO_2max), VE/VCO_2, expiratory flow limitation (EFL) and dynamic end expiratory volume (DEELV) was performed. In patients with hyperinflation correlations and multiple regressions between BMI, EFL, DEELV and VE/VCO_2 over Wmax and VO_2max were calculated. Results: patients ended the test due to dyspnea with increased VE/VCO_2 (mean 34). Depending on the severity of COPD, VE/VCO_2 was higher. 36 patients presented hyperinflation (mean DEELV 0.5 L), with a reduction in Wmax and in VO_2max(mean: 63 and 76%). Significative correlation was demonstrated between VE/VCO_2 over VO_2max and Wmax (r: -0.5 and -0.5). In multiple regression the relation between VE/VCO_2 and Wmax and VO_2max was significative ($p< 0.05$ and <0.05), but not to BMI, EFL and DEELV. Conclusions: in COPD patients ventilatory inefficiency increases depending on the severity and is related with a reduction in the exercise capacity. Ventilatory inefficiency is an independent factor in to reduce exercise capacity in COPD.