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Title: Acidotic responses in patients with idiopathic pulmonary fibrosis: The mechanisms of exertional dyspnea

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Body: Background and objective: Very often, some idiopathic pulmonary fibrosis (IPF) patients with the severe exertional hypoxemia may realize only mild dyspnea; the mechanisms underlying the exertional dyspnea in such patients have not yet been elucidated. We investigated the exercise responses to hyperoxia in relation to dyspnea profile as well as cardiopulmonary and acidotic parameters in 13 patients with stable IPF. Methods: This was a single-blind trail, in which subjects breathed 30% O_2 or compressed air (CA) in random order during two incremental treadmill exercise tests. Results: $Pao_2$and $Paco_2$ were higher during exercise ($p < 0.01$, $p < 0.001$, respectively, by repeated-measures ANOVA). At the peak exercise, 30% O_2 reduced plasma lactate level ($p < 0.05$), and dyspnea score and the mean change from resting condition in pH were similar while breathing 30% $O_2$and CA. The dyspnea-ratio (%) of Doxygen uptake (peak minus resting oxygen uptake) curve reached a break point that occurred at a similar exercise point while breathing 30% O_2 and CA. Conclusions: Despite inhaling 30% O_2 and CA, IPF patients did not develop ventilatory compensation in exertional acidosis, stopped exercise when the similar changes from resting condition in pH were seen. Furthermore, hyperoxic conditions did not alter the pattern of exertional dyspnea in IPF patients during a standardized exercise program.