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Title: Kinetics of dyspnea during 6-minute walking test in obese patients with obstructive sleep apnea (OSA)

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Body: Background: Dyspnea during walk is usually observed in Obesity and OSA patients but its mechanism is not clearly established. We investigated the kinetics of dyspnea during six-minute walking test and physiological correlates. Methods: 20 obese CPAP-treated OSA (BMI= 38 ± 4 kg/m²) performed a six-minute walking test (6MWT) and measurements of pulmonary function, fat-free-mass, physical activity, quadriceps and respiratory muscle strength, Sadoul scale and maximal aerobic capacity on cycloergometer. Dyspnea was assessed every two minutes during the 6MWT using the modified Borg scale to evaluate its kinetic of improvement during walk. The median of delta of dyspnea at 2-min walk was used to distinguish patients with early dyspnea (Borg score > 2: n = 8) to those with late dyspnea (Borg score ≤ 2: n = 12). Results: We found significantly distinct profiles of kinetics of dyspnea during the 6MWT (ANOVA: p < 0.001; fig.1). Leg discomfort at 2-min walk (4.0(2.3-6.0) vs. 1.9(0.0-2.0), p = 0.003) and Sadoul score (3.0(2.0-4.25) vs. 1.5(1.0-2.0), p = 0.026) vs. were significantly higher in patients with early dyspnea as compared with late dyspnea group, respectively. None of the other physiological parameters were different between groups. Conclusion: Obese OSA presented with two different profiles of dyspnea scores during 6MWT which were concomitant to leg discomfort during walk and perception of dyspnea during daily task.