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Title: Impact of CPAP in the physical exercise tolerance and sympathetic-vagal balance of patients with chronic heart failure

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Body: Chronic heart failure (CHF) lead peripheral muscle dysfunction that influence in the low physical exercise tolerance. However, noninvasive ventilation is able to improve CHF functional capacity. Objective: Evaluated the efficiency of continuous positive airway pressure (CPAP) in physical exercise tolerance and heart rate variability (HRV) in the CHF patients. Material and Methods: seven man with CHF (62±8 years) and left ventricle eject fraction of 41±8% were submitted to symptom-limited incremental exercise test (IT) on the cicloergometer. At subsequent visit, on a separate days, these patients were randomized to performed four constant work rate exercise test without and with CPAP (5cmH2O) until maximal tolerance: i) at 50% peak work rate of IT; and ii) at 75% peak work rate of IT. At rest and during these tests, instantaneous heart rate (HR) was recorded using a cardiofrequencimeter and HRV was analyze by time domain (SDNN and RMSSD indexes). For statistical procedures, Wilcoxon test or Kruskall-Wallis test with Dunn post-hoc were used as appropriate. In additional, categorical variables were analysis through Fischer test ($p<0.05$). Results: There are significant improvements in exercise tolerance at 75% peak work rate of IT with CPAP (405±52 vs. 438±58s). RMSSD indexes were lower during exercises tests compared at rest with CPAP at 50% peak work rate of IT. Conclusion: These data suggest that CPAP appears to be a useful strategy to improvements the functional capacity in the CHF patients. Finally, the positive impact of CPAP did not generated significant changes in the HRV during physical exercises.