Abstract

Background: The forced vital capacity (FVC) test is routinely performed to evaluate pulmonary function in patients with chronic obstructive pulmonary disease (COPD). However, the influence of the FVC maneuver on the cardiovascular system of patients with COPD is poorly understood. Objectives: To analyze the behavior of heart rate (HR), blood pressure (BP) and heart rate variability (HRV) during the FVC test in COPD patients. Methods: Nineteen men with COPD (72±7 years, GOLD stage I=3, II=5, III=7 and IV=4 patients) performed the FVC test while having their HR monitored. HRV was assessed in time (rMSSD) and frequency domains (LF, HF and LF/HF) at rest, before and after the best FVC maneuver. BP was measured at rest, immediately before and at the end of the test, as well as 10 minutes after the end of the test. Results: At the beginning of the FVC maneuver, HR decreased (p<0.001) and then increased gradually until the end of the test (p<0.001). After the end of maneuver, HR continued to increase until it reached a peak (p<0.001), and then it fell quickly to below at-rest values (p<0.001) prior to returning to baseline. The BP and HRV indices did not change during the assessment. Conclusion: The FVC test influences the behavior of COPD patient HR without changing autonomic control or BP.

Keywords

Chronic obstructive pulmonary disease, spirometry, vital capacity, heart rate, autonomic nervous system.