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Title: Effect of percutaneous transluminal coronary angioplasty on deep breathing heart rate variability

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Body: BACKGROUND: Coronary angioplasty (PTCA) is a common treatment method in patients with coronary heart disease, but its effects on deep-breathing heart rate variability (HRV) has not been well established. OBJECTIVE: The aim of the study was to analyse deep breathing heart rate variability, which reflect the sympathovagal control of heart rate in patients before, after 1 and 30 days of elective PTCA. METHODS: The study consisted of 10 consecutive patients (7 men, 3 women) with age of 62.4 ± 11.6 years, single-vessel coronary artery disease (CAD) who underwent elective coronary angioplasty with stent implant. Heart-rate variability (HRV) was obtained at rest (spontaneous breathing) and during respiratory sinus arrhythmia maneuver (RSA-M) by cardiofrequencímetro (Polar S810i) before, after 1 and 30 days of PTCA. RSA-M consisted of deep-breathing in 6 respiratory cycles per minute. HRV analyses were obtained by the time, frequency-domain (high frequency- HF; and low frequency-LF) and non-linear methods (triangular R-R intervals-RR-tri and Approximate Entropy -ApEn). RESULTS: The PTCA did not induce changes during deep-breathing when compared to spontaneous breathing in the time domain indices ($P > 0.05$). However, before of PTCA higher values of BF/AF ratio were observed ($P < 0.05$). Interestingly, deep-breathing increased RR-tri only before and after 1 day of PTCA ($P < 0.05$) and ApEn decreased only after 1 month ($P < 0.05$). CONCLUSION: Patients with CAD presented sympathetic activation before PTCA, which produced altered responses during deep-breathing after the procedure.