

Multivariate Analysis of Cardiovascular Oscillations for Risk Stratification

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Linear and nonlinear analyses of cardiovascular oscillations have led to an improved knowledge about physiological and pathophysiological cardiovascular regulation. The aim of this study was to investigate whether measures from linear and/or from nonlinear heart rate variability (HRV), blood pressure variability (BPV) and interaction analysis enhance risk prediction in different CHF patients.

Chronic heart failure (CHF) is a major and growing public health concern affecting about 23 million people worldwide, more than 1 Million die every year due to CHF. Many of victims could probably survive if their individual risk would be known in time and one could early start with an effective therapy.

24h Holter ECG from 509 CHF and 30 min ECG and continuous blood pressure from 91 patients with dilated cardiomyopathies (DCM) and from 30 age-matched healthy subjects were analyzed.

The obtained results clearly show that the multivariate analysis of cardiovascular oscillations as indices from HRV, BPV and interactions especially from nonlinear dynamics contribute significantly to enhanced risk stratification in heart failure patients partly independent from the origin of their heart failure.