

Gender Based Variability Time Series Complexity Analysis

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Abstract : Nonlinear methods of heart rate variability (HRV) analysis are becoming more popular. It has been observed that complexity measures quantify the regularity and uncertainty of cardiovascular RR-interval time series. In the present work, SampEn has been evaluated in healthy Normal Sinus Rhythm (NSR) male and female subjects for different data lengths and tolerance level r . It is demonstrated that SampEn is small for higher values of tolerance r . Also SampEn value of healthy female group is higher than that of healthy male group for short data length and with increase in data length both groups overlap each other and it is difficult to distinguish them. The SampEn gives inaccurate results by assigning higher value to female group, because male subject have more complex HRV pattern than that of female subjects. Therefore, this traditional algorithm exhibits higher complexity for healthy female subjects than for healthy male subjects, which is misleading observation. This may be due to the fact that SampEn do not account for multiple time scales inherent in the physiologic time series and the hidden spatial and temporal fluctuations remains unexplored.

Keywords : heart rate variability, normal sinus rhythm group, RR interval time series, sample entropy

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