

Assessment of heart rate variability for prognostication of life expectancy in patients with advanced cancer

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Abstract

Objectives: The goal of the study was to assess heart rate variability as a life expectancy prognostication measure for patients with advanced cancer.

Method: The first stage of the research was to implement a QRS detection algorithm which accurately discriminates normal heart beats (regular QRS complex) from abnormal events (e.g. Premature Ventricular Contractions) from holter data files recorded using an orthogonal lead configuration (X, Y, and Z). Heart rate variability was then assessed by calculating the standard deviation of the beat to beat intervals (SDNN = Standard deviation of N-N interval).

Results: The algorithm was tested using data from the REFINE (Noninvasive Risk Assessment Early After a Myocardial Infarction) Study. 304 data files were evaluated. Normal beats were correctly classified with an accuracy of 99.9%, which corresponds well to other QRS detection algorithms. We are currently in the process of validating our heart rate variability measures.

Conclusion: We have developed a tool to assess heart rate variability. It is hypothesized that heart rate variability parameters can be used to discriminate patients with short life expectancy (less than one week) from those with longer life expectancies.

References

1. Christakis NA, Lamont EB, Extent and determinants of error in doctors' prognoses in terminally ill patients, Prospective cohort study. *BMJ* 2000.