Device and Methods for Determining Prognosis in Atrial Fibrillation

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Technology description

Technical Summary

The invention provides systems, methods, and apparatus for determining severity or prognosis of atrial fibrillation. The apparatus are non-invasive. Electrical activities of a heart are detected with external electrodes such as EEG leads. The signal from the electrodes are filtered and amplified and then converted into digital signals. Each QRST complex within the signal is averaged with similar QRST complexes to form templates. Each QRST complex is then removed from the signal by subtracting its corresponding template. After the QRST complexes have been removed from the signal, the resultant signal called the fibrillatory baseline signal, undergoes a Fourier transformation to produce a frequency domain set of signals. The signals in the frequency domain are analyzed to derive a peak frequency in the spectrum. The frequency of the peak is then used to classify the atrial fibrillation. The inventors have discovered that this peak frequency measurement is an accurate reflection of the peak frequency recorded directly from the heart. This non-invasive measurement has a number of uses. It can be used to determine the length of time the arrhythmia has been present for patients having persistent atrial fibrillatio n, to guide the treatment of patients with atrial fibrillation, and to determine the duration of normal sinus rhythm after initially successful cardioversion.

Application area

Determine and characterize cardiac electrical activity.
Guide treatment of atrial fibrillation.

Institution

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