

The Effect of Beat Interval on Ventricular Repolarisation in Atrial Fibrillation

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Abstract

Aims: Atrial fibrillation (AF) is characterised by rapid beat interval changes. The aim of the study was to investigate the effect of such changes on ECG ventricular repolarisation characteristics.

Methods: In 10 AF recordings beat averaging of lead V4 was used to generate averaged T waves where the preceding beat interval (R-R) was either short (625±25 ms) or long (1075±25 ms). The amplitudes of T wave (T amp) and T wave end, defined as the TU nadir, (TUn amp), and the intervals for R wave to T wave peak (R-T) and R wave to T wave end (R-TUn) were measured from these average beats. Difference in measured T wave characteristics between short and long beat intervals were quantified.

Results: All measurements increased significantly from short to long beat intervals: T amp (mean±SD) 0.31±0.17 mV (short) vs 0.35±0.20 mV (long) (p = 0.04); TUn amp 0.00±0.02 mV (short) vs 0.03±0.03 mV (long) (p = 0.009); R-T 251.7±13.5 ms (short) vs 264.2±12 ms (long) (p = 0.002) and R-TUn 376.5±31 ms (short) vs 392±26.5 ms (long) (p=0.027).

Conclusion: ECG T wave characteristics are significantly affected by preceding ventricular beat interval in AF.