

Frequency analysis of the fibrillatory activity from surface ECG lead V1 and intracardiac recordings: implications for mapping of AF.

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摘要

Abstract

Aims Fibrillatory waves observed in the surface electrograms may be a direct reflection of the electrophysiologic mechanism of the atrial fibrillation (AF). This study compared the fibrillatory waves in the surface ECG and the individual intracardiac mapping sites in different types of paroxysmal AF.

Methods and results Thirty patients with paroxysmal AF originating from the pulmonary veins (PVs) or superior vena cava (SVC) were enrolled. Frequency analysis was performed on the intracardiac electrograms recorded from various mapping sites in both atria sequentially with simultaneous surface electrogram recordings. The SVC–AF patients had a trend toward a higher DF in ECG lead V1 when compared with the PV–AF patients (7.35 ± 2.09 vs. 5.89 ± 0.79 Hz, $P = 0.018$). The mean dominant frequency (DF) of the LA mapping sites in the PV–AF patients was higher than that in the SVC–AF patients (7.06 ± 0.66 vs. 6.13 ± 0.96 Hz, $P = 0.009$), whereas the mean DF of the RA mapping sites was similar between the two groups (5.84 ± 0.80 vs. 6.26 ± 1.11 Hz, $P = \text{NS}$). The intra-class correlation coefficient (ICC) between the mean DF of the RA sites and V1 was higher ($r = 0.21$, $P = 0.02$) when compared with the mean DF of the LA sites ($r = -0.007$, $P > 0.05$). Furthermore, the maximal ICC was observed in the anterolateral RA free wall ($r = 0.84$, $P < 0.001$) and not the other anatomic sites of the RA and LA.

Conclusion The fibrillatory activity observed in ECG lead V1 correlated primarily with the activity of the anterolateral RA free wall and thus may be

useful for detecting the AF source if it is close to that area.

Conclusions and implications: Fluvastatin produced nitric oxide through the PI3kinase/Akt pathway, thus reducing the PV vascular diastolic tension and PV spontaneous activity. These results may contribute to the beneficial effects of statins.