Magnetocardiography F-Wave Analysis in Chronic AF Patients

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There is different spectrum of F-wave morphologies on standard ECG, from prominent F-wave to too small one to detect. Kobayashi reported the improved success rate of AF treatment by voltage of F-wave in V1 lead more than 0.1mV (90% vs. 66%). Kornings and Guillem reported three types of AF: single broad wave front, one or two wavelets, and highly fragmented wavelets. To elucidate these impression of F-wave differences, we analyze F-wave using Magnetocardiography in long-standing persistent AF patients. 19 chronic AF patients ECG and MCG data were analyzed retrospectively. Two different F-wave types were classified as type I (Prominent and sustained F-wave) and type II (Not prominent or not sustained F-wave). Between the two groups, we compared their characteristics, and final rhythm. Monthly-based spot ECG was used for follow-up result analysis. Average cycle length (ms) and amplitude (pT) of type I (n=4) are 165–173ms, 0.58pT and type II (n=15) 114–122ms, 0.24pT. There are statistically significant differences in AF duration (6.8m vs. 23.4m), number of F waves in 10 seconds records (45.5 vs. 36.1), total length of F waves in 10 seconds records (5661ms vs. 4014ms), and male sex (50% vs. 100%). AF free rate of each type are 100% in type I and 57.1% in type II, but not significantly different in statistics. Type I shows more recent AF history, more female preference, and better surgical results than type II.

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