The Spatio-temporal Differences of the Precordial Electrocardiographic Amplitude after Flecainide Provocative Test: The Novel Predictor of Fatal Arrhythmia in Brugada Syndrome

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Introduction: Flecainide provocative test is important for the diagnosis of Brugada syndrome (BrS). However, the link between dynamic differences of ECG parameters after provocative test and fatal ventricular arrhythmia (VA) in BrS remains unknown.

Methods: Between 2014 to 2019, we studied 21 patients with BrS (mean age: 36±14; 19 male), including 11 patients (52%) with history of fatal VA and 10 without. ECG parameters and the dynamic changes (Δ) at 2nd, 3rd, and 4th intercostal space (ICS) 12-lead ECG before and 1, 6, 12, 24-hours after flecainide provocative test were analyzed.

Result: Comparing to BrS patients with fatal VAs, there was a significant larger ΔV1 BrS amplitude from ICS2 at 12-hours after flecainide provocative test in those without fatal VA {-0.39 [(-0.45)-0.04] vs. -0.04 [(-0.08)-0.05] mV, p=0.02}. The total amplitude of V1 at ICS3 was significantly lower in the VF group before [0.93(0.84-1.14) vs. 0.61(0.41-0.59) mV, p=0.01] and after Flecainide test at 18th/24th hours[0.93(0.77-1.16) vs. 0.49(0.40-0.60) mV, p=0.03; 1.40(1.26-1.70) vs. 1.07(0.23-1.46), p<0.01, respectively]. In addition, the total amplitude of V1 at ICS2 24th hours after intaking Flecainide was also significantly lower in the VF group[0.93(0.77-1.16) vs. 0.49(0.40-0.60)mV, p=0.04].

Conclusion: The total amplitude of ICS2, ICS3 at V1 and differences of ICS2 ΔV1 voltage after provocative test provide potential value on risk stratification in BrS.