What is the role of late-potentials determined by signal-averaged ECG in predicting flecainide provocative test in brugada pattern?

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Abstract

Introduction

The sudden cardiac death risk in Brugada Syndrome (BrS) is higher in patients with spontaneous type 1 pattern. Brugada diagnosis is also established in patients with induced type 1 morphology after provocative test with intravenous administration with a sodium blocker channel. Nevertheless, this group of patients is known to be at a lower risk of SCD, and their risk stratification is still a matter of discussion. Late potentials (LP) detected on signal-averaged ECG (SAECG) on the RVOT have been previously proposed as a predictor factor for BrS, even though data is lacking on its value.

Purpose

To evaluate the association between positive LP (LMS40> 38ms) on SAECG with modified Brugada leads and a positive flecainide test in patients with non-type 1 BrS.

Methods

Retrospective single-center study of non-type 1 BrS patients referred for the performance of a flecainide provocative test. Patients presenting with spontaneous type 1 morphology were excluded from the study. Study of LP on SAECG with modified leads for Brugada were evaluated before administration of flecainide [2mg/kg (maximum150mg), for 10minutes] with determination of filtered QRS duration (fQRS), root mean square voltage of the last 40ms of the QRS complex (RMS40) and duration of low amplitude signals <40μV of the terminal QRS complex (LMS40).

Results

126 patients (47.3 ± 14.1 years, 61.9% males) underwent study with LP SAECG and flecainide test. Among these patients, 7.9% were symptomatic and 16.7% had familiar history of BrS. Flecainide test was positive in 46.8% of patients.
In patients with a positive flecainide test, 64.4% presented LMS40 > 38ms whereas LMS40 > 38ms was present in only 46% of those with a negative flecainide test (p = 0.031). The presence of positive LMS40 was a positive predictor for a positive flecainide test, associated with a two-fold increase likelihood in the induction of a Brugada pattern (OR: 2.12; IC95% 1.025-4.392; P = 0.043).

There was no association between fQRS or RMS40 and a positive flecainide test (p = NS). fQRS > 114ms and RMS40 < 20uV was present in 22% and 61% of patients with a positive flecainide test, respectively.

Conclusion
In patient with non-type 1 Brugada syndrome, LMS40 > 38ms in SAECG was a predictor for a positive flecainide test, suggesting that this finding could be helpful on the risk stratification of patients undergoing diagnostic study for Brugada syndrome.