P945

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.

Abstract Figure. Effect of LMS 40 in flecainide test

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Topic: flecainidebrugada syndromesudden cardiac deathqrs complexlate potentialssignal-averaged electrocardiographyintravenous infusion proceduresdiagnosissodiumrisk reductionstratificationqrs complex durationintravenous route of drug administrationright ventricular outflow tract

Issue Section: Clinical applications