Abstract: P947

dST-Tiso index, a new shallow ECG marker in response to ajmaline for predicting ventricular fibrillation induction in Brugada patients

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Introduction - No study has been performed to investigate the role of drug-induced ECG morphology modifications as potential risk factors for the development of malignant arrhythmias in patients with Brugada syndrome.

Purpose - The aim of this study is to introduce a new index to improve asymptomatic patient stratification and to report the first case of a patient with Brugada syndrome undergoing ajmaline testing that has been evaluated using a diagnostic 252-lead ECG vest.

Methods - From December 2018 to April 2019, 26 consecutive patients [mean age 39.9 (30–59) years, 18 male] with no cardiovascular risk factors underwent ajmaline testing. By evaluating ECG recordings after ajmaline administration, we calculated an index that we called "dST-Tiso", that is the duration of the positive component of the ST-T wave to the isoelectric line, in V1 and/or V2.

Results- Out of 26 patients, 16 (61.5%) had a positive test, with type 1 (coved-type) ECG diagnostic pattern in leads V1-V2 from the 2nd, 3rd and 4th intercostal spaces. The mean recorded dST-Tiso value was 239 ± 76 ms. The ECG showed T-wave above the isoelectric line in 5 patients with a significantly higher dST-Tiso value (on average 360 ± 56 ms), and biphasic T-waves below the isoelectric line in 11 patients with a dST-Tiso value of 209 ± 42 ms (Mann-Whitney, p=0.039). All patients with positive ajmaline test underwent programmed electrical stimulation (PES). Ventricular fibrillation was induced during PES in all 5 patients with stretched dST-Tiso. In the remaining 11 patients without stretched dST-Tiso, no ventricular arrhythmia was induced by PES. Fig 1 Moreover, using non-invasive high-density electrocardiographic mapping (252-lead ECG vest), 3 patients with dST-Tiso positive pattern received a second ajmaline protocol, with assessment of both the depolarization and repolarization phases.

Conclusion - The ECG pattern of prolonged dST-Tiso seems to have a significant impact on safety during PES and may have potential for stratifying risk of sudden death in patients with PES-induced ventricular tachycardia/fibrillation.
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