Acute Myocardial Ischemia Detection with a New ST Segment Monitoring Algorithm in an ICD

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Some ICDs offer an algorithm to monitor the ST-segment, calculating the difference between the ST-Segment and the isoelectric PQ-Interval. A threshold can be programmed for the ST-Shift which triggers an IEGM episode stored in the device and a vibration alert. The threshold is programmable as percentage of the R-Wave amplitude. The first clinical case of an event of intracardiac ST-segment monitoring and alert in a patient with acute myocardial ischemia is presented.

Method: 69y old male, CAD, CABG, EF=25%, NYHA III, DDD-ICD (AnalyST DR; SJM), Stenting for stenosis of the RCA. The ST-Monitoring feature was activated and the ST threshold was optimized.

Results: Pat. was admitted after a device alert. Interrogation revealed four ST episodes with a maximum ST shift of 15%, duration of 4:08 minutes at a HR of 106min⁻¹. Clinically the patient had no angina, no change of pre-existing ECG, CK and Trop T were negative. An angiography was performed which showed a stenosis of the RCA, distal to the stented area. A PCI was performed which set off another device vibration alert. The maximum ST shift was ~40%, HR of 76min⁻¹. This ST-episode lasted 7:40 min.

Conclusion: The detection of the acute ischemia by the device was correct. The continuous monitoring of the IEGM for ST-segment shifts may detect myocardial ischemia at an early stage.

Keywords: Ischemia detection, device technology, ICD