

The value of microvolt T-wave alternans in the diagnosis of reversible myocardial ischemia in patients without structural cardiac disease

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BACKGROUND: Microvolt T-wave alternans (MTWA) testing has shown promise as a noninvasive predictor of potentially lethal ventricular arrhythmias.¹⁻³ No clinical study examined parameters and value of MTWA for detection of ischaemia.

WE HYPOTHESIZE: 1) MTWA can be new non-invasive tool for the detection of reversible ischemia in patients with suspected CAD without structural heart disease. 2) MTWA can detect ischemia earlier and with greater sensitivity and specificity compared with exercise ECG testing. 3) Threshold value of MTWA and heart rate at which the alternans is estimated can be different, compared to values in prediction of lethal arrhythmias.

METHODS: 50 patients with suspected stable coronary disease but without previous structural heart disease were included. All patients have undergone Echo, exercise ECG test, MTWA with classical and modified threshold alternans values and coronary angiography.

RESULTS: In group with no significant CAD 37.0% had a false positive result on exercise ECG test, while none of the patients had false-negative findings. Sensitivity of exercise ECG test in the detection of coronary artery disease in our study was 100% and the specificity was 56.5%. In a group of angiographically positive patients, standard MTWA accurately identified 86% of patients, while 15% had a false negative result. All angiographically negative patients were accurately identified with no false positives. Sensitivity of MTWA was 63.6% and specificity 100%. However the best ratio of sensitivity and specificity (92.3% and 95.8%) had modified criteria for positive MTWA (MTWA > 1.5 mcV at heart rate 115-125/min).

CONCLUSIONS: This study has shown that MTWA can be the new non-invasive tool for the detection of reversible ischemia in patients with suspected CAD without structural heart disease. Also MTWA can detect ischemia earlier and with greater sensitivity and specificity compared to exercise ECG testing. Best ratio of sensitivity and specificity for this indication have modified MTWA criteria.

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LITERATURE

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