The effects of positional changes on T wave amplitude in healthy subjects

Natalie Cutri
John F Beltrame
Angela M Kucia
Background: The coronary slow flow phenomenon (CSFP) is a coronary microvascular disorder that typically presents as an acute coronary syndrome and is characterised by delayed vessel opacification on angiography in the absence of obstructive coronary artery disease. This study compared the frequency of the ST segment (STs) and T wave (Tw) change during continuous ST/T wave monitoring in healthy controls and patients with the CSFP.

Method: Twenty consecutive patients admitted to the coronary care unit with an acute coronary syndrome, who had angiographic evidence of the CSFP and suitable continuous ST/T monitoring for at least 4 h were studied. The findings were compared with 20 healthy controls with no history of cardiac disease or chest pain who underwent 4 h of continuous ST/T monitoring. Clinically significant STs change was defined as ≥1 mm change in amplitude of the STs in ≥2 contiguous leads compared to baseline ECG. Significant Tw change was defined as ≥1 mm change in amplitude of Tw in ≥2 contiguous leads.

Results: Amongst the 20 CSFP, 4 patients (20%) had significant STs change and 17 (85%) had significant Tw changes. In comparison, none of the healthy controls had STs change and only one (5%) had Tw changes. Furthermore, quantitative analysis comparing CSFP patients and healthy controls demonstrated greater fluctuations in STs (160 ± 45 mV vs. 49 ± 21 mV, respectively; p = 0.02) and Tw changes (242 ± 87 mV vs. 135 ± 99 mV, respectively; p < 0.001) in the CSFP patients.

Conclusion: Most patients with the CSFP have transient ST/T wave changes consistent with myocardial ischaemia during an acute coronary syndrome presentation.

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Natalie Cutri1,*, John Francis Beltrame1, Angela Kucia2
1 The University of Adelaide, The Queen Elizabeth Hospital, Adelaide, South Australia, Australia; 2 The University of South Australia, Department of Nursing and Midwifery, Adelaide, South Australia, Australia

Background: ST segment (STs) and T wave (Tw) changes are markers of myocardial ischaemia. However, STs changes have been reported with changes in body position. The effect of body position on Tw changes is unknown and the objective of this study.

Method: Tw changes in 4 different body positions were examined in 19 healthy volunteers with no history of cardiovascular disease. Significant Tw change was defined as ≥1 mm change in Tw amplitude in ≥2 contiguous leads compared to baseline ECG.

Results: Positional Tw changes were observed in 7 (37%) subjects. There was no difference in age or gender between those with or without positional Tw change. In those exhibiting positional Tw change, the changes occurred when lying in the left lateral position in 6 (86%) subjects and the right lateral position in 2 (29%) subjects (1 patient had changes in both positions). ECG changes occurred in V1 (114%), V5 (100%) and V3 in 57%.

Conclusion: This study demonstrates that in a healthy population, there are frequently differences in Tw amplitude in right precordial ECG leads between the supine and left lateral positions, particularly in V5. This may have implications for clinicians in interpreting Tw changes in subjects undergoing continuous 12-lead ischaemia monitoring.

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