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Impact and prognostic value of tpe interval and tpe/ qt ratio on the myocardial reperfusion in patients treated with primary angioplasty

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Background: In ST elevation myocardial infarction (STEMI), the resulting transmural dispersion of repolarization can be evaluated by measuring the interval from the peak to the end of the T wave (Tpe interval) and Tpe/QT ratio. Myocardial reperfusion, when assessed by myocardial blush grade (MBG), is an independent predictor of adverse cardiac outcomes. The aim of this study was to elucidate the relationship between Tpe interval and Tpe/QT ratio and MBG in STEMI patients with successful revascularization.

Methods: This study included 403 STEMI patients treated with primary angioplasty. They were classified according to MBG into (MBG 0-1, n=170), and (MBG 2-3, n=233). The QT interval was measured from the onset of QRS complex to the end of T wave and the Tpe interval was measured from the peak to the end of T wave; at admission and after 90 minutes of revascularization. These parameters along with in-hospital adverse outcomes and long term all-cause mortality were recorded and compared between the two groups.

Results: Tpe interval and Tpe/QT ratio were significantly shortened at 90th minute of revascularization ($P<0.001$), and this shortening was more prominent in (MBG 2-3) compared to (MBG 0-1) ($P<0.001$). Tpe interval > 72.5 ms and Tpe/QT ratio > 0.18 were strong independent predictors of impaired myocardial reperfusion ($P=0.004$) and associated with lower 6 months survival rate ($P=0.009$, $P=0.03$, respectively).

Conclusions: Tpe interval and Tpe/QT ratio had a prognostic value where its prolongation was associated with impaired myocardial reperfusion and adverse in-hospital outcomes and higher all-cause mortality.

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