

**The Effect of Successful Primary Percutaneous  
Coronary Intervention on QT dispersion in  
Acute Myocardial Infarction Patients**

**Thesis Submitted by**

*Tamer Sayed Mohammed Abdel Mawla, MB.B.CH*

**In Partial Fulfillment of  
Master Degree in Critical Care Medicine**

***Supervisors***

*Prof. Dr. Helmy Hassan EL Ghawaby*

*Professor of critical care medicine,  
Critical care department,  
Cairo University*

*Prof. Dr. Dalia Mohamed Ragab*

*Assistant professor of critical care medicine,  
Critical care department,  
Cairo University*

*Mohamed Ibrahim EL Desouky MD.*

*Lecturer of critical care medicine,  
Critical care department,  
Cairo University*

*Cairo University  
2010*

# ***Abstract***

## ***Introduction:***

At the cellular level acute ischemia alters action potentials and affects on myocardial recovery time (myocardial repolarization) and homogeneity of myocardial repolarization, dispersion of repolarization is arrhythmogenic. QT dispersion has been suggested to give information about the heterogeneity of myocardial repolarization.

## ***Aim of work:***

Our study aimed at comparing the effect of successful primary PCI on QT dispersion (QTd) and corrected QT dispersion (QTcd) with patients who received streptokinase and patients who came late and did not receive any reperfusion therapy in acute STEMI and determining whether patients with more QTd will go a more complicated hospital course (regarding the development of ventricular arrhythmias) or not.

## ***Patients and methods:***

Our study included 60 patients presented with acute STEMI were studied, the study populations were divided into two groups: **Group I:** (30 pts underwent primary PCI. **Group II:** subdivided into two subgroups: **Ila:** (15 pts received streptokinase) **Iib:** (15 pts did not receive reperfusion therapy). QTd and QTcd were measured and compared in the three groups on admission, after 24h of admission and after 5 days.

## ***Results:***

QT & QTc dispersions significantly were higher in patients with anterior more than inferior MI ( $79.16 \pm 25.67$  msec vs  $62 \pm 18.17$  msec,  $P: 0.004$  regarding QTd and  $91.95 \pm 28.76$  msec vs  $68.33 \pm 23.52$  msec,  $P: < 0.001$  regarding QTcd). It was noted that reduction in QTd and QTcd was statistically significant in group I than groups Ila and Iib after 24h as follow;  $34.33 \pm 13.56$  msec (group I) vs  $48 \pm 18.2$  msec (group Ila) vs  $66 \pm 24.43$  msec (group Iib),  $P < 0.05$  as regard QTd, and  $39.33 \pm 11.72$  msec (group I) vs  $56 \pm 23.84$  msec (group Ila) vs  $74.60 \pm 26.7$  msec (group Iib),  $P < 0.05$  as regard QTcd respectively. On the 5<sup>th</sup> day reduction in QTd and QTcd was statistically significant in group I than groups Ila and Iib as follow;  $23 \pm 9.52$  msec (group I) vs  $45.33 \pm 15.97$  msec (group Ila) vs  $58.66 \pm 23.25$  msec (group Iib)  $P < 0.05$  and  $26 \pm 11.63$

msec (group I) vs  $52.66 \pm 21.2$  msec (group IIa) vs  $60.66 \pm 23.25$  msec (group IIb)  $P < 0.05$  respectively. The value in the expected date discharge (5<sup>th</sup> day) was still higher than normal in group IIa & IIb. QT & QTcd dispersion on admission were higher in patients with MI who developed ventricular arrhythmias than patients who did not ( $90 \pm 11.55$  msec vs  $70 \pm 24.54$  msec,  $P: 0.05$  regarding QTd and  $110 \pm 8.61$  msec vs  $80.53 \pm 28.78$  msec with  $P$  value  $0.028$  regarding QTcd). We found that patients with early peaking of enzymes had more reduction in QT & QTc dispersion early after reperfusion ( $43.2 \pm 11.44$  vs  $60.5 \pm 13.16$ ,  $P: < 0.001$  regarding QTd and ( $49.60 \pm 15.93$  vs  $68.5 \pm 17.55$ ,  $P: < 0.001$  regarding QTcd).

### ***Conclusion:***

QTd is higher in pts with MI who developed ventricular arrhythmias. So QTd and QTcd on admission may be helpful parameter which can detect patients with AMI who are at risk for development of ventricular arrhythmias after admission. Reperfusion therapy with primary PCI or thrombolytic agents reduces QT and QTc dispersions in patients with acute MI. QT and QTc dispersions are shorter with primary PCI compared to thrombolytic therapy.

### ***Key words:***

Primary PCI, QT dispersion, Acute STMI