

## 관상동맥 혈관성형확장술이 QT와 JT분산에 미치는 영향

김범수 · 강진호 · 이승원 · 심성춘 · 조용균 · 이만호 · 박정로

## Effect of Coronary Angioplasty on QT and JT Dispersion

Bum Soo Kim, MD, Jin Ho Kang, MD, Seung Won Lee, MD, Sung Choon Shim, MD,  
Young Kyun Cho, MD, Man Ho Lee, MD and Jung Ro Park, MDDepartment of Internal Medicine, Kangbuk Samsung Hospital, College of Medicine,  
Sungkyunkwan University, Seoul, Korea

## ABSTRACT

**Background** : QT dispersion, reflecting inhomogenous ventricular repolarization, increases in myocardial ischemia. In addition, Many studies reported that prolonged QT dispersion reduced to normal after reperfusion treatment. We have carried out this study to evaluate the QT and JT dispersion before and after the angioplasty in patients with coronary artery diseases. **Method and Materials** : Seventy-two patients (55 men and 17 women : 18 acute myocardial infarction, 9 unstable angina and 45 stable angina) who underwent percutaneous transluminal coronary angioplasty were evaluated. Standard 12-lead electrocardiograms were recorded 24 hours before and 24 hours after angioplasty at a paper speed of 25 mm/sec. **Results** : There was no significant change in heart rate or the maximum or minimum QT interval after angioplasty. QT dispersion significantly decreased after angioplasty ( $p < 0.05$ ). And QTc dispersion (QTcd) also similarly reduced ( $p < 0.01$ ). JT dispersion (JTc) and JTc dispersion (JTcd) were not changed significantly. There were significant reduction in QTd and QTcd in the group of patients without acute myocardial infarction ( $p = 0.005, 0.004$ , respectively) but not in JTd and JTcd. However, in patients with acute myocardial infarction, all four dispersion were not reduced significantly. And in patients with multivessel angioplasty, there were significant reduction of QTd, QTcd, JTd and JTcd ( $p = 0.016, 0.014, 0.036, 0.030$ , respectively). **Conclusions** : As changes in QT and JT dispersion reflect successful reperfusion by angioplasty, they can be accepted as promising test for assessing the effectiveness of angioplasty clinically. However the methodology still has several unresolved issues and larger, prospective clinical studies are needed. (Korean Circulation J 1998;28(8):1280-1286)

**KEY WORDS** : Angioplasty · QT dispersion · JT dispersion.

## 서 론

## 가

QT<sup>1)</sup>

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: 1998 7 15  
: 1998 8 21  
: , 100 - 634 108

: (02) 739 - 3211 · : (02) 734 - 7472  
E - mail : bs9107@samsung.co.kr

QT, 12 QT QT

가<sup>2-4)</sup> 가 QT<sup>7)</sup>

<sup>5)6)</sup> QT<sup>8)</sup> <sup>9)</sup> QT<sup>5)7)10)</sup>

QT

가

13)14)

15)

QT

JT 6)

대상 및 방법

1997 3 1998 4

72

50%

24 24

12

, 25 mm/sec

가 QT JT

Bazett's 16)

QT JT

QT (QTd) QT (QTcd), JT

(JTd) JT (JTcd)

±

PC - SPSS program paired t - test

p 0.05

결 과

72 ( : 55 , : 17 )

56.84 ± 12.76

가 18 , 가 9 ,

가 45 .

56 ,

**Table 1.** Patient characteristics

	n	%
Patients	72(M : 55, F : 17)	
Age(yr ; mean ± SD)	56.84 ± 12.76	
Risk factors		
Hyperlipidemia	39	54.2
Hypertension	27	37.5
Diabetes mellitus	19	26.4
Smoking	20	27.8
Medication		
-blocker	21	29.2
Calcium blocker	64	88.9
Digoxine	1	1.3
Clinical diagnosis		
Acute myocardial infarction	18	25
Unstable angina	9	12.5
Stable Angina	45	62.5
Single-vessel angioplasty	56	77.8
LAD	41	73.2
LCx	9	16.1
RCA	6	10.7
Multivessel angioplasty	16	22.2

n : number, LAD : left anterior descending artery, LCx : left circumflex artery, RCA : right coronary artery

16 (Table 1).

가

QT QT

. QT

55.33 ± 26.08 msec

43.33 ± 19.12 msec

(p<0.05).

51 (70.8%) QT

가

17 (23.6%) , 4

(5.6%) . QT QT

(p<0.01).

JT JT

가 (Table 2).

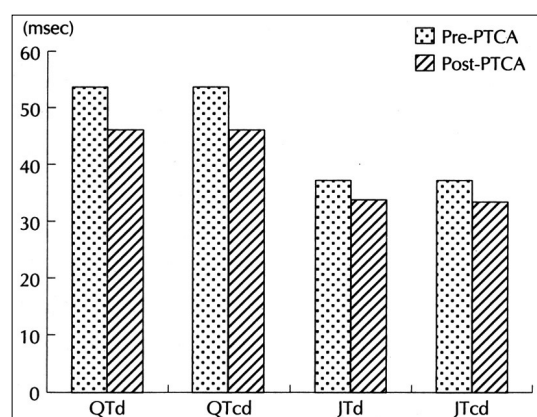
(QT , QT , JT

, JT )

QT ,

**Table 2.** Electrocardiographic data before and after angioplasty

	Pre-PTCA	Post-PTCA	P value
Heart rate (beats/min)	68.22 ± 13.62	66.97 ± 10.02	.541
QTmax (msec)	438.89 ± 49.19	430.44 ± 43.85	.326
QTmin (msec)	383.55 ± 44.68	387.11 ± 43.20	.557
QT dispersion (msec)	55.33 ± 26.08	43.33 ± 19.12	.010
QTc max (msec)	465.91 ± 62.64	457.37 ± 59.25	.325
QTc min (msec)	407.52 ± 55.78	411.94 ± 58.43	.497
QTc dispersion (msec)	58.38 ± 30.69	45.42 ± 23.29	.008
JTmax (msec)	350.22 ± 54.71	361.54 ± 53.44	.220
JTmin (msec)	309.56 ± 43.95	328.60 ± 47.66	.972
JT dispersion (msec)	40.67 ± 31.65	31.33 ± 20.41	.102
JTc max (msec)	371.42 ± 61.79	361.54 ± 53.44	.232
JTc min (msec)	328.62 ± 51.08	328.60 ± 47.66	.999
JTc dispersion (msec)	42.80 ± 34.78	32.92 ± 24.26	.090



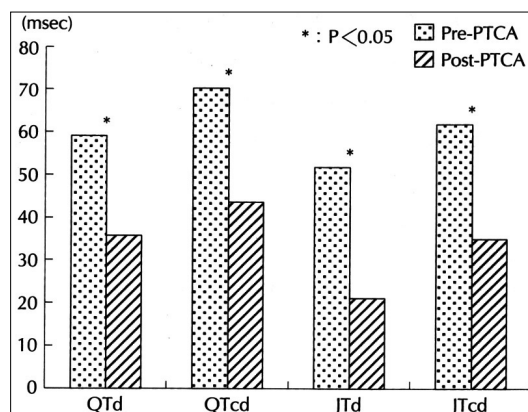
**Fig. 1.** Four dispersions (QTd, QTcd, JTd, JTcd) in patients undergoing single-vessel angioplasty. There were no significant reductions in all four dispersions after angioplasty.

QT, JT, JTc dispersion (p=0.016, 0.014, 0.036, 0.030) (Figs. 1 and 2).

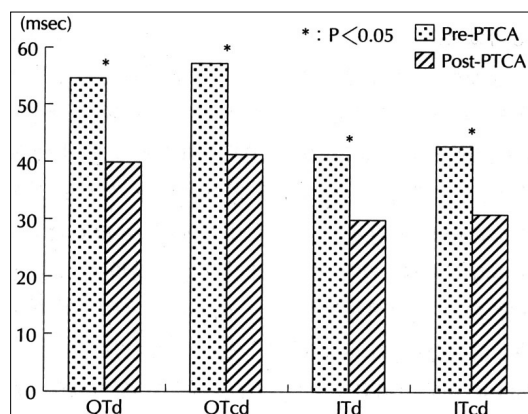
가

QT

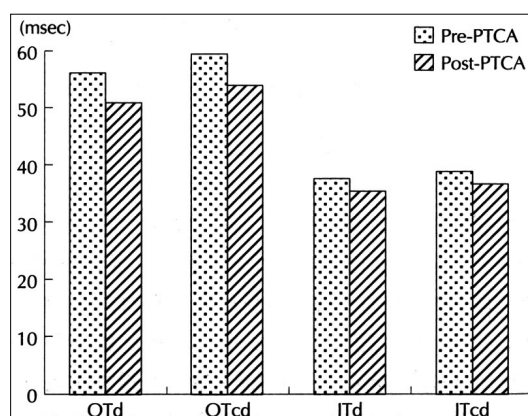
QT



**Fig. 2.** Four dispersions (QTd, QTcd, JTd, JTcd) in patients undergoing multivessel angioplasty. There were significant reductions in all four dispersions after angioplasty.



**Fig. 3.** Four dispersions (QTd, QTcd, JTd, JTcd) in patients without acute myocardial infarction. Angioplasty resulted in significant reductions in QTd and QTcd, but not in JTd, JTcd.



**Fig. 4.** Four dispersions (QTd, QTcd, JTd, JTcd) in patients with acute myocardial infarction. There were no significant reductions in all four dispersions after angioplasty.

( $p=0.005, 0.004$ ) (Figs. 3 and 4) JT  
 JT 가  
 ( $p=0.075, 0.063$ ). Kelly <sup>13)</sup>  
 고 찰 10 14  
 1887 12 QT  
<sup>17)</sup> (viability)  
 가 가  
 가 . 1990 QT 가  
 (heterogenous repolarization) <sup>4)</sup> QT  
<sup>2)5)6)</sup>  
 QT  
 가 QT  
 QT 가 JT JT 가 QT  
<sup>6)</sup> Yunus <sup>14)</sup>  
 QT QT 가 QT  
 (action potential  
 JT JT 가 . QT  
 duration)  
<sup>13-15)</sup> QT 가 JT JT  
 가 가  
 가 25 mm/sec  
 50 mm/sec 가 QT  
 가 가 Yunus <sup>14)</sup>  
 QT  
 가 Tarabey <sup>18)</sup>  
 2 QT QT  
 가 QT 가  
 QT , QT  
 QT , JT JT  
 가 QT  
 QT QT 가 <sup>19)20)</sup>  
<sup>2)</sup> QT 가  
 QT QT  
 QT JT QT 가 QT  
 QT JT QT  
 QT QT

Moreno <sup>2)</sup> QT 244 가 , QT 가 QT 가가 QT 가 .  
<sup>19)</sup>가 QT Kelly <sup>13)</sup> 가 가 50 mm/sec  
<sup>14)</sup> QT Asim JT 가 가  
QT JT viability  
QT JT QT JT  
<sup>22)</sup> QT , JT JT  
QT 가 가  
T (end point) 요 약  
12 연구배경 :  
가 QT (QTmax - QTmin) 가  
<sup>23)</sup> 가 가 가 QT QT JT 가  
QRS JT JT  
QT JT  
방법 및 대상 :  
1997 3 1998 4 72  
가 가 QT ( : 55 , : 17 )  
가 18 ,  
가 9 , 가 45  
56  
QT 가 16  
24 24 12

, 25 mm/sec

QT QT , JT

JT

결 과 :

1)

가 QT QT

2) QT QT (p<0.05). JT JT

가

3) QT 가 17 51 (70.8%) (23.6%), 4 (5.6%)

4) (QT , QT , JT , JT )

QT , QT , JT ,

JT ( p=0.016, 0.014, 0.036, 0.030).

5)

가

QT QT ( p=0.005, 0.004) JT , JT ( p=0.075, 0.063).

결 론 :

QT JT

가 가

가 가 QT

중심 단어 : QT JT

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