

심근조영 심초음파를 이용한 심내막하 경색 진단을 위한 심전도 검사의 신뢰도 평가

서정기 · 박금수 · 권 준 · 권미영 · 이 돈 · 양성식
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The Evaluation of Diagnostic Validity of ECG for the Subendocardial Infarction by Myocardial Contrast Echocardiography

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ABSTRACT

Background and Objectives : The pathological findings of Non-Q wave myocardial infarction (NQMI) on ECG did not always correspond to subendocardial infarction (SEMI). The purpose of this study was to evaluate the diagnostic validity of ECG for SEMI by myocardial contrast echocardiography (MCE) in the patients with acute myocardial infarction (AMI). **Materials and Methods :** The study population was 84 patients who underwent MCE under the diagnosis of AMI. MCE was performed by intracoronary injection of sonicated Hexabrix into the infarct related artery and SEMI was diagnosed by inspecting endocardial defect with epicardial enhancement on MCE. **Results :** 1) Among 19 NQMI cases, 7 cases showed SEMI with MCE score 0.5, 11 cases with score 1, and 1 case with score 0. Among 65 Q-wave MI (QMI) cases, only 5 cases showed SEMI. 2) 7 cases who had NQMI with SEMI showed LV wall motion recovery at follow-up echocardiography except 1 case. Whereas, of 5 QMI cases who had SEMI, only 1 case improve LV wall motion. **Conclusion :** NQMI on ECG does not always imply SEMI on MCE, but the absence of pathologic Q wave in the patients with SEMI is thought to be a predictive factor of the recovery of LV wall motion. (**Korean Circulation J 2000;30(8):958-964**)

KEY WORDS : Non-Q wave myocardial infarction · Subendocardial infarction · Myocardial contrast echocardiography.

서 론
50~75%
Q
(Non - subendocardial myocardial
가 infarction : Non - SEMI)

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ST - T (non - transmural) subendoc - ar dial myocardial infarction : SEMI) 50% Judkins 5

ST - T 가 Q¹⁾ . MCE 50% TIMI 3

Q 가 가 (W - 380 Heat System - Ultrasonics) Sonicator

2-5) SEMI 가 sonicated Hexabrix[®] 3 cc, Hewlett packard

가 “Q (NQMI) ” “QMI) ” “ST 2 cc HP 2500, 2.5 MHz transducer

Q²⁻⁶⁾ 가⁵⁾ MCE 16 ,

(myocardial contrast echocardiography : MCE) 0,

가 가 0.5 1, SEMI

7-11) MCE Q SEMI

가 가 MCE SEMI

Q 12 NQMI Non - SEMI 28 ± 4

12 ,

재료 및 방법

ST T 가

Q 2 84

5

결 과

MCE , Q 군의 임상적 특성(Table 1)

QMI 65 NQMI 19 .

NQMI ST 84 (: =60 : 24)

T NQMI SEMI(7) 63 ± 12 , NQMI Non - SEMI(12) 57 ± 11 , QMI SEMI(5) 61 ± 11 ,

(V₁ tall R, R/S>1, R 0.6 mV , QMI Non - SEMI(60) 59 ± 13

V2 R/S>1.5, R 1.5 mV) 가 . SEMI

Table 1. Baseline characteristics of patients

	NQMI		QMI	
	SEMI	Non-SEMI	SEMI	Non-SEMI
No. of Patients	7	12	5	60
Age (years)	63 ± 12	57 ± 11	61 ± 11	59 ± 13
Sex (M : F)	5 : 2	8 : 4	2 : 3	45 : 15
Infarct Site by ECG				
Anteroseptal	2 (29%)	3 (25%)	0 (0%)	21 (35%)
Anterior	1 (14%)	1 (8%)	0 (0%)	9 (15%)
Inferior	2 (29%)	5 (42%)	4 (80%)	24 (40%)
Posterior	1 (14%)	1 (8%)	0 (0%)	0 (0%)
Lateral	1 (14%)	2 (17%)	1 (20%)	6 (10%)
Treatment				
Thrombolysis	3 (43%)	3 (25%)	2 (40%)	17 (28%)
Direct PTCA	1 (14%)	2 (17%)	1 (20%)	7 (12%)
Conservative	3 (43%)	7 (58%)	2 (40%)	36 (60%)
Infarct related artery				
LAD	3 (43%)	4 (33%)	0 (0%)	30 (50%)
LCX	2 (29%)	3 (25%)	1 (20%)	11 (18%)
RCA	2 (29%)	5 (42%)	4 (80%)	19 (32%)
Stenosis (%)	78 ± 24	84 ± 26	76 ± 25	80 ± 21
Diseased vessel				
Minimal	1 (14%)	2 (16%)	1 (20%)	2 (3%)
One	5 (72%)	5 (42%)	3 (60%)	30 (50%)
Multi-vessels	1 (14%)	5 (42%)	1 (20%)	28 (47%)

NQMI : non-Q wave myocardial infarction, QMI : Q wave myocardial infarction
 SEMI : subendocardial myocardial infarction, Non-SEMI : non-subendocardial infarction
 PTCA : percutaneous transluminal coronary angioplasty, Stenosis : diameter stenosis
 LAD : left anterior descending artery, LCX : left circumflex artery
 RCA : right coronary artery

2 , 1 , 6 , 1 , 2 SEMI 2) , 20
 , LAD 3 , LCX 3 , RCA 6 , 58 .

QMI와 NQMI에서의MCE소견 (Figs.1 and 2)

() 가 QMI NQMI 19 7 MCE SEMI
 SEMI 4 (57%), NQMI Non-SEMI 5 (42%), QMI 11 1 , 1 0
 SEMI 3 (60%), QMI Non-SEMI 24 (40%) QMI 65 5 SEMI
 가
 가 SEMI

Non - SEMI

심전도와 MCE 검사에 의한 분류

(p = ns). 5 QMI 65 Non-SEMI 60 (92%), SEMI
 6 (NQMI SEMI 1 , 5 (8%) , NQMI 19 Non-SEMI
 NQMI Non-SEMI 2 , QMI SEMI 1 , QMI Non- 12 (63%), SEMI 7 (27%) NQMI

QMI SEMI가 , QMI SEMI 83%, 80% SEMI
5 .
SEMI

SEMI의 진단을 위한 심전도의 신뢰도 (Table 2)

SEMI , 58%,

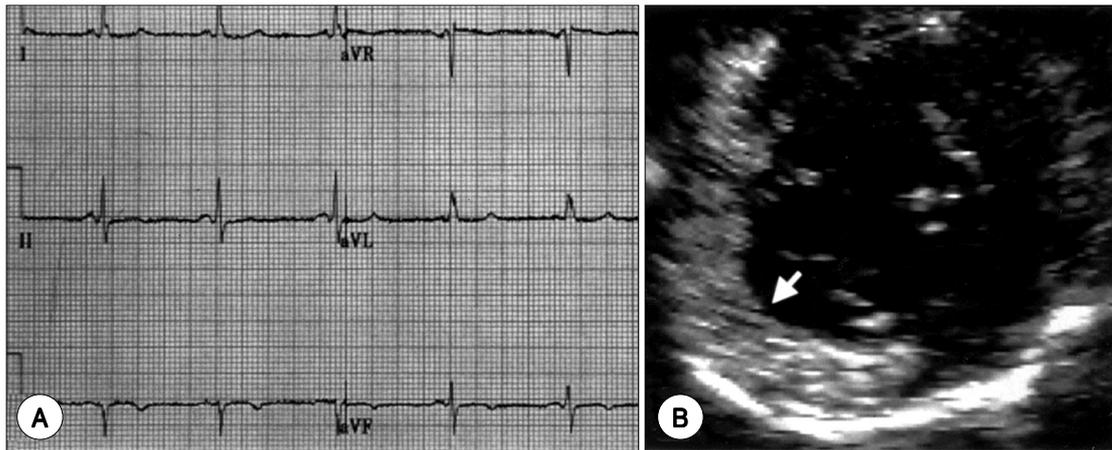


Fig 1. An example of Non-Q wave myocardial infarction without subendocardial infarction. A : ECG showing T inversion in lead III, aVF. B : MCE showing transmural enhancement of infarct segment.

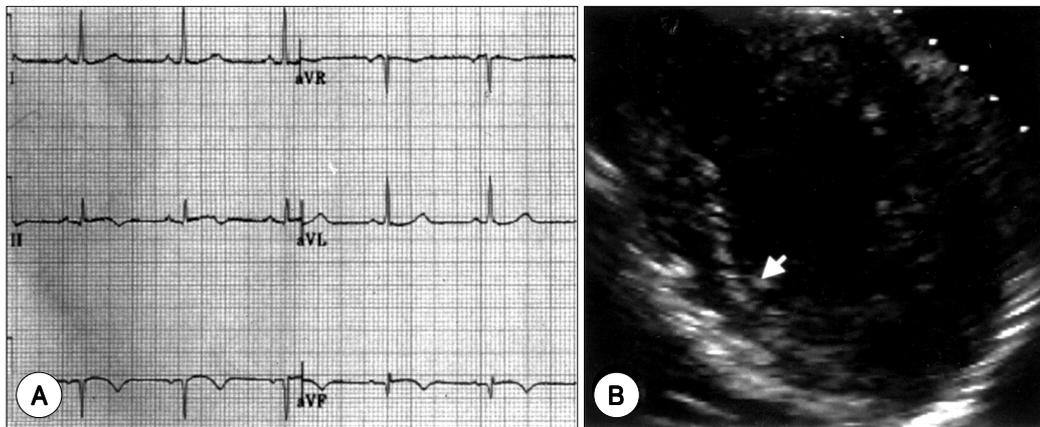


Fig 2. An example of Non-Q wave myocardial infarction without subendocardial infarction. A : ECG showing pathologic Q wave in lead III, aVF. B : MCE showing endocardial perfusion defect with epicardial enhancement of infarct segment.

Table 2. Validity of ECG for diagnosis of subendocardial infarction

	SEMI	Non-SEMI
Non-Q MI	7	12
Q MI	5	60

Sensitivity 58%, Specificity 83%, Accuracy 80%

SEMI : subendocardial myocardial infarction, Non-SEMI : non-subendocardial myocardial infarction, Non-Q MI : non-Q wave myocardial infarction
Q MI : Q wave myocardial infarction

Table 3. The wall motion recovery of patients with subendocardial infarction according to the ECG findings

	NQMI (n = 7)	QMI (n = 5)
Wall motion recovery		
(+)	6 (86%)	1 (20%)
(-)	1 (14%)	4 (80%)

NQMI : Non-Q wave myocardial infarction
QMI : Q wave myocardial infarction

가

(MCE)

Q

가

가

, 가

가

, 가

Q

가

재료 및 방법 :

84 (QMI 65 , NQMI 19

)

5

9 - 11)(24)25)

가 MRI

MRI

, SPECT

가

PET

,

가

.²⁵⁾

MCE SEMI

가

85%

12

NQMI

Non - SEMI

,

12

,

28 ± 4

가

가

결 과 :

NQMI SEMI(7) 63 ±

가

,

가

12 , NQMI Non - SEMI(12) 57 ± 11 , QMI SEMI

(5) 61 ± 11 , QMI Non - SEMI(60) 59 ± 13

SEMI

NQMI

QMI

가

2 ,

1 ,

6 ,

1 ,

2

SEMI

가

가 NQMI SEMI 4

가

가

(57%), NQMI Non - SEMI 5 (42%), QMI SEMI

3 (60%), QMI Non - SEMI 24 (40%)

가 SEMI

Non - SEMI

(p = ns).

요 약

NQMI 19

7

QMI 65

5

연구배경 :

MCE

SEMI

SEMI

,

58%,

83%,

Q

80% . MCE SEMI

12

ST - T

NQMI SEMI

7

가 6 (86%) ,

(SEMI)

QMI SEMI

5

1

(20%)

NQMI

Q 가

MCE

Non - SEMI

12

10 (83%)
 결론 :
 MCE SEMI
 NQMI
 MCE SEMI Q
 Q 가
 가 SEMI Q
 가
 중심 단어 : Q

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