

심근경색 부위에 따른 좌·우 심실기능의 차이 : 게이트 심장혈액풀스캔에 의한 분석

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Differences in Left and Right Ventricular Function between Different Infarct Sites : An ECG-Gated Blood Pool Study

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ABSTRACT

Background : Ventricular function is one of the important prognostic factors in patients with coronary artery disease. Among noninvasive approaches for the evaluation of ventricular performance, radionuclide ventriculography has shown to be of particular values in the patients with myocardial infarction. We have evaluated ventricular function with ECG-gated blood pool scan (GBPS) in patients with myocardial infarction of different locations and compared right and left ventricular functions. **Method :** Left and right ventricular function was assessed with multigated blood pool scan in 49 patients at 2-3 weeks after acute myocardial infarction (anterior infarction = 23, inferior infarction = 19, and lateral infarction = 7). Left ventricular ejection fraction (LVEF), right ventricular ejection fraction (RVEF), maximal emptying rate, maximal filling rate, phase angle and full width at half maximum (FWHM) of phase angles were measured during rest. **Results :** 1) LVEF was significantly lower in the patients with anterior myocardial infarction (32.2%) than that of inferior (46.5%, $p < 0.001$) or lateral infarction (45.5%, $p < 0.05$), but not different between inferior and lateral infarction. 2) RVEF was significantly lower in the patients with inferior myocardial infarction (24.6%) than that of anterior (30.5%, $p < 0.05$) or lateral infarction (36.1%, $p < 0.001$), and RVEF of anterior infarction was significantly lower than that of lateral infarction ($p < 0.05$). 3) Phase angle and FWHM of left ventricle and right ventricle phase histogram were not significantly different among the patients groups with different infarct sites. **Conclusion :** Ventricular function was differently affected by different infarct sites. Inferior infarction resulted in a greater reduction in right ventricular ejection fraction. In contrast, LVEF was greatly depressed in anterior infarction than in inferior infarction. (**Korean Circulation J 1998;28(6):871-878**)

KEY WORDS : Acute myocardial infarction · Gated blood pool scan · Ventricular function.

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가 7 (, 4
3 , ; 65) .
Q 가 $V_2 - V_5$,
가
, Q
가 , , aVF
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1)
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24
(ECG-gated cardiac blood pool scintigraphy)
가
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가 1)
, mens, USA) 20
(phase analysis)
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50%
1)
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(multiple gated acquisition ; MUGA) 10
(low energy parallel hole colli-
mator) (standard field of view)
10 20°
(caudal tilt) 45°
microdelta computer system(Sie-
mens, USA) 64×64 word matrix
(multiple gated acquisition mode)
R R-R 20
30
6,000,000 ±5%
대 상
49 (; 38 87 , ; 63)
23 (, 16
7 , ; 64)
19 (, 14 5 , ; 59)

가 .

1.6 ± 0.4/1.3 ± 0.3 , 2.1 ± 0.5/1.7 ± 0.5

microdelta computer 2.0 ± 0.5/1.5 ± 0.6

system -

(p<0.01, p<0.05).

(,), , (p<0.05)

(,), 가 .

가 (Table 1, Fig. 1).

1 -

우심실 기능

24.6

(maximal emptying rate) (maximal ± 8.3%, 30.5 ± 9.1%

filling rate) - 36.1 ± 3.3%

cosine Fourier⁴⁾ co -

sine function - (p<0.05, p<0.001),

가

cosine function (p<0.05).

(peak time) R 2.0 ± 0.6/1.8 ± 0.7,

0° ; 360° cosine 2.7 ± 0.8/2.1 ± 0.6

(delayed angle) 1.8 ± 0.5/1.1 ± 0.5

(phase image) .

(p<0.01, p<0.01),

(FWHM : full width

at half maximum) . (p<0.01, p<0.05).

Siemens 가 가 (Table 2,

Fig. 2).

(amplitude)

15% pixel , 가

결 과

좌심실 기능

32.2 ± 10%

46.5 ± 12.8%

45.5 ± 13.9%

(p<0.001, p<0.05),

Table 1. Comparison of left ventricular function among patients with anterior, inferior and lateral myocardial infarction

	Anterior	Inferior	Lateral
EF (%)	32.2 ± 10.0 ^{‡,§}	46.5 ± 12.8	45.5 ± 13.9
MER (EDV/sec)	1.6 ± 0.4 ^{‡,§}	2.1 ± 0.5	2.0 ± 0.5
MFR (EDV/sec)	1.3 ± 0.3*	1.7 ± 0.5	1.5 ± 0.6
Phase angle (°)	136.2 ± 21.5	134.8 ± 19.4	132.4 ± 16.1
FWHM (°)	32.6 ± 12.0	35.8 ± 12.5	39.8 ± 6.4

EF : ejection fraction

MER : maximal emptying rate

MFR : maximal filling rate

FWHM : full width at half maximum in histogram

*p<0.05 : anterior vs inferior

† p<0.01 : anterior vs inferior

‡ p<0.001 anterior vs inferior

§ p<0.05 : anterior vs lateral

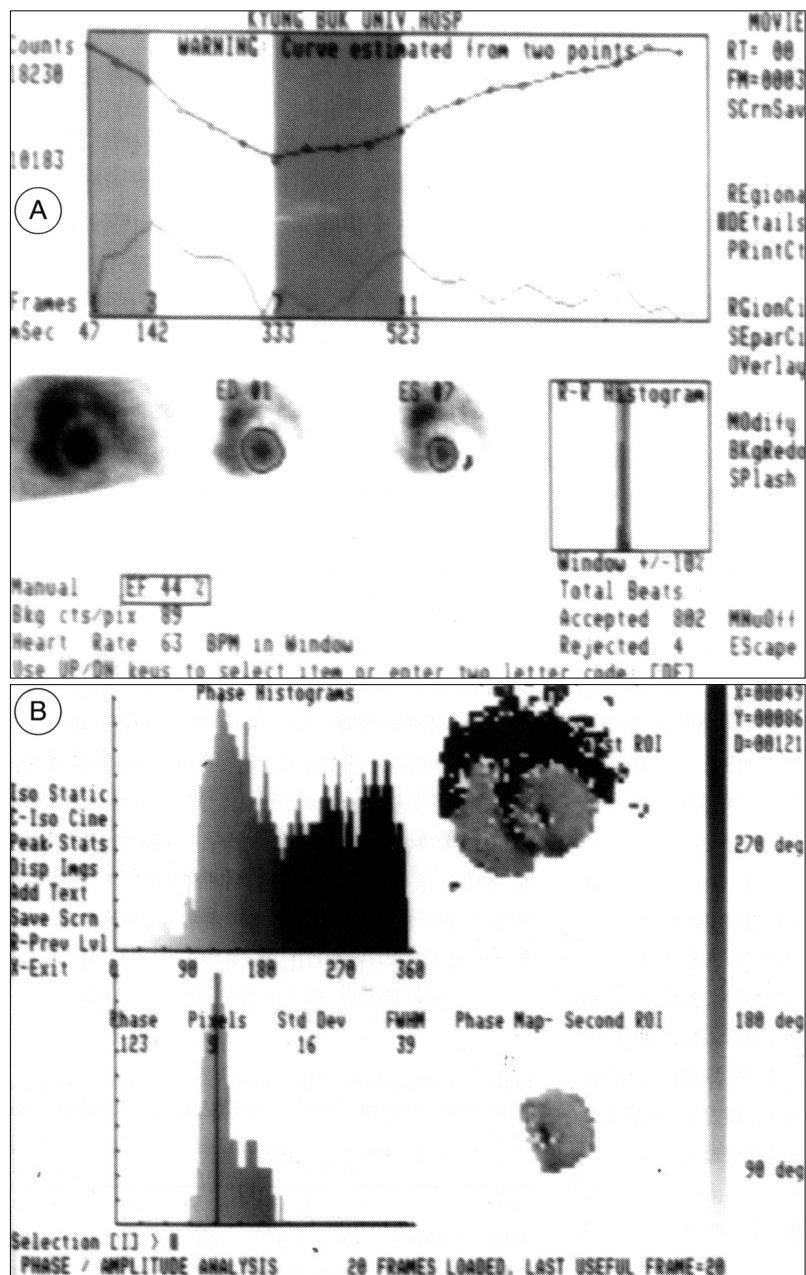


Fig. 1. Time-activity curve and phase histogram of left ventricle in a patient with anterior myocardial infarction. (A) There noted dilated LV cavity and left ventricular ejection fraction (LVEF) was 44%. (B) Mu-ltipeaked wide LV phase histogram in left ventricle is noted (phase angle 123, FWHM 39).

고 찰

1) 가

2) 가

가

5)

가

가

Table 2. Comparison of right ventricular function among patients with anterior, inferior and lateral myocardial infarction

	Anterior	Inferior	Lateral
EF(%)	30.5± 9.1	24.6± 8.3*§	36.1± 3.3
MER(EDV/sec)	2.7± 0.8	2.0± 0.6†	1.8± 0.5¶
MFR (EDV/sec)	2.1± 0.6	1.8± 0.7	1.1± 0.5‡,¶
Phase angle(°)	137.0±24.5	134.8±21.6	145.2±12.1
FWHM(°)	28.1±13.3	25.9± 8.9	24.8±13.7

EF : ejection fraction

MER : maximal emptying rate

MFR : maximal filling rate

FWHM : full width at half maximum in histogram

*p<0.05 : anterior vs inferior

†p<0.01 : anterior vs inferior

‡p<0.05 : inferior vs lateral

§p<0.001 : inferior vs lateral

¶p<0.05 : anterior vs lateral

¶p<0.01 anterior vs lateral

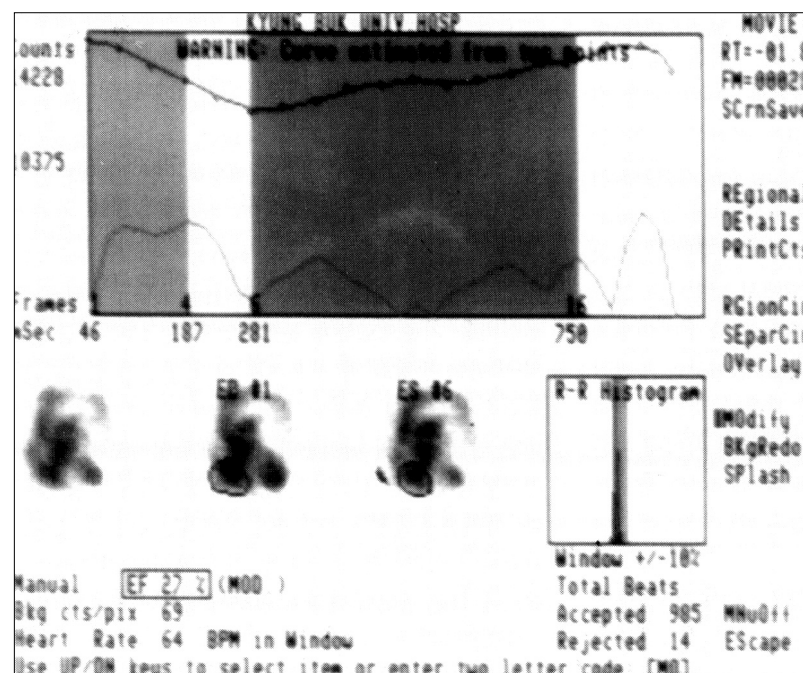


Fig. 2. Time-activity curve of right ventricle in a patient with inferior myocardial infarction showed RVEF of 27%.

Hands ¹²⁾ . Hirsowitz ¹⁰⁾¹¹⁾ (regional wall motion) ,

가

가 가 .

가 1 ,

Reduto ¹⁴⁾ .

가 ¹⁵⁾가 .

가 ,

가 Kim ¹⁸⁾

가 143 ± 20.5 ° 29.6 ± 7.7 ° 132 ±

20.6 ° 36.1 ± 9.4 °

가 132.4 ±

16.1 ° 136.2 ± 21.5 ° ,

32.6 ± 12.0 ° 39.8 ± 6.4 ° Kim

가 1 37.0 ± 24.5 ° 28.1 ±

가 (septum) 13.3 ° 134.8 ± 21.6 ° 25.9 ± 8.9 °

145.2 ± 12.1 ° 24.8 ±

13.7 ° 가 Lee ¹⁹⁾

가 ¹⁶⁾

가 가

가

duce ¹⁷⁾ Bona -

ak diastolic filling rate) (pe -

가 가 ,

가

가 ¹⁷⁾ 가가 .

가

¹⁾²⁰⁾²¹⁾

요 약

연구배경 : 2) 24.6
 $\pm 8.3\%$, $30.5 \pm 9.1\%$
 $36.1 \pm 3.3\%$

가 ,
 , (p<0.05, p<0.001),
 , 가
 가 가 (p<0.05).
 $2.0 \pm 0.6/1.8 \pm 0.7$,
 $2.7 \pm 0.8/2.1 \pm 0.6$
 $1.8 \pm 0.5/1.1 \pm 0.5$

가
 (p<0.01, p<0.01).
 3) 가

방 법 :
 49 (결 론 :
 ; 38 87 , ; 63)
 23 (, 16
 17) 19 (,
 14 5) 가 7 (
 , 4 3)
 99mTc

결 과 :

1) $32.2 \pm 10\%$
 $46.5 \pm 12.8\%$
 $45.5 \pm 13.9\%$

(p<0.001, p<0.05),
 가 .
 $1.6 \pm 0.4/1.3 \pm 0.3$
 $2.1 \pm 0.5/1.7 \pm 0.5$
 $2.0 \pm 0.5/1.5 \pm 0.6$

(p<0.01, p<0.05).
 (p<0.05)
 가 .

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