

## 심근교 환자의 임상적 및 관상동맥 조영술 특성과 장기적 임상 경과

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### Clinical and Angiographic Characteristics, and Long-Term Clinical Follow-up of Myocardial Bridge

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#### ABSTRACT

**Background** : An anatomical anomaly in which myocardial fibers make the bridge over the epicardial coronary artery is called 'myocardial bridge'. Its clinical significance has been emphasized, because some serious cardiac diseases such as myocardial infarction or sudden cardiac death can be developed. **Methods** : Forty five patients (30 male and 15 female,  $48 \pm 11.0$  years) out of 4,694 patients who underwent diagnostic coronary angiography and diagnosed as myocardial bridge at Chonnam National University Hospital between January 1996 and March 1999, were analyzed retrospectively. **Results** : The incidence of myocardial bridge on the coronary angiography was 0.95%. Middle left anterior descending artery was most common (36 patients, 80%) in the location. Associated stenoses were observed in 5 cases (11.1%). For the pharmacological treatment, calcium antagonist (26 cases, 57.7%),  $\beta$ -blocker (23 cases, 51.1%) and nitrate (9 cases, 20.0%) were used. Single regimen was used in 30 (66.7%) cases, dual drugs were administered in 11 (24.4%) and triple drugs in 2 (4.4%) cases. During clinical follow-up of 40 patients for  $14 \pm 11$  months (4 -40 months), no major cardiac events developed in all patients. **Conclusion** : The incidence of the myocardial bridge is 0.95% and middle left anterior descending artery was the most common site. Long-term prognosis is relatively good in almost patients with myocardial bridge. (Korean Circulation J 2000;30(7):819-826)

**KEY WORDS** : Myocardial bridge · Coronary angiography.

서  
론

가 over - bridging

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가

가 (digital electronic caliper)

% lumen diameter reduction  $100 - \{2S/(D1 + D2) \times 100\}$  (S = , D1 = , D2 = )

1987 가 , 50% A , 50% B .

Thallium SPECT Thallium - 201 stress - redistribution re - injection rest - redistribution protocol 가

가 Bruce protocol exercise treadmill test

( 140/90 mmHg), (total cholesterol 240 mg/dl), ,

대 상

1996 1 1999 3

4,694

45

통 계

$\pm$  ,

SPSS for Windows Fisher's exact test

p 0.05

방 법

결 과

관상동맥 조영술상 심근교의 유병률

가 4,694 45

0.95%

Judikins

30 ° 대상자의 임상적 특징

45 ° , 48 ± 11.0 , 30

45 ° , 15 2 : 1 .

40 16 가

가 60 11 , 50 10 (Fig. 1).

8 (17.7%),

50% 28 (62.2%), 6

(13.3%), 3 (6.6%)

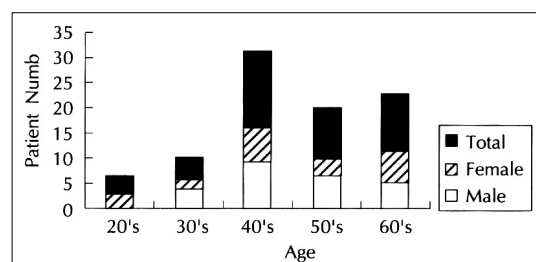
1 가 .  
(17 , 37.7%), (12 ,  
26.6%) (3 , 6.6%), (4  
, 8.8%) (Table 1).

#### 심장검사 소견

17 (37.7%)  
8 (47.7%)  
15 (33.3%) Thallium SPECT  
12 (80%)

#### 관상동맥 조영술 소견

36 (80%),  
6 (13%), , 1 (2.2%),  
2 (4.4%) 43 (95.5%)  
(Fig. 2). 5 (11.1%)

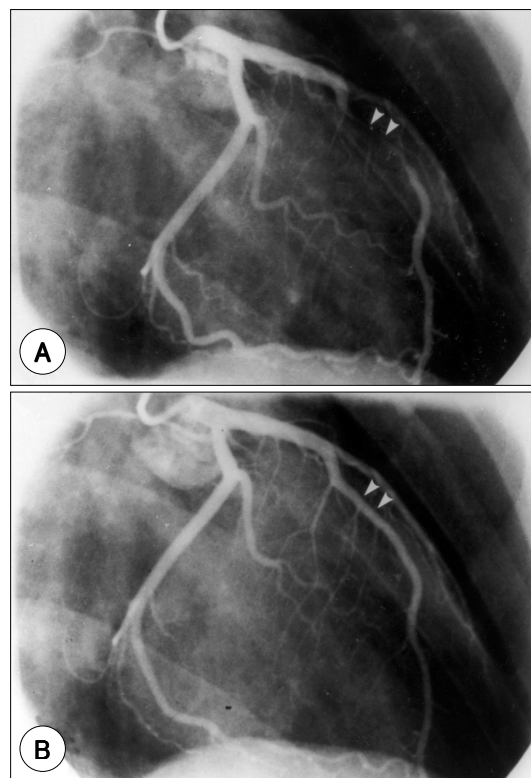


**Fig. 1.** Distribution of age and sex in patients with myocardial bridge.

**Table 1.** Clinical characteristics of the patients

	No	%
Age (years)	48 ± 11.0	
Sex		
Male	30	66.6
Female	15	33.4
Clinical diagnosis		
Atypical chest pain	8	17.7
Stable angina	28	62.2
Unstable angina	6	13.3
Acute myocardial infarction	3	6.6
Risk factors		
Smoking	17	37.7
Hypertension	12	26.6
Hypercholesterolemia	3	6.6
Diabetes mellitus	4	8.8

3  
2 가  
(Table 2).



**Fig. 2.** A case of myocardial bridge. Left coronary angiogram taken at right anterior oblique view revealed pronounced compression in the middle of left anterior descending artery (LAD) during systole (A) and no compression of LAD during diastole (B).

**Table 2.** Angiographic characteristics of the patients

	No	%
Bridged artery		
Left anterior descending artery		
Middle	36	80.0
Distal	6	13.0
Middle and distal	1	2.2
Left circumflex artery	2	4.4
Right coronary artery	0	0
Fixed stenosis		
In bridged artery	3	6.7
In another artery	2	4.4
Systolic narrowing of lumen		
<50%	28	62.2
50%	17	37.8

1 가 1

2

50%

A 28 (62.2%), 50%

B 17 (37.8%)

1 ergonovine

1 가

#### 약물치료

가 26 (57.7%), 가 23 (51.1%),

가 9 (20.0%),

가 30 (66.7%), 가 11 (24.4%),

가 2 (4.4%)

가 9 가

(4 )

(5 ) (Table 3).

#### 추적관찰

40 (88.8%) 14 ± 11 (4 40

) 27 (67.7%)

, 5 (12.5%)

, 5 (12.5%) , 3

(7.5%)

50%

A 19 (76.0%) , 2 (8.0%) 85.7%

, 3 (12.0%)

1 (4.0%) 50%

B 8 (53.3%) , 3

(20.0%) 2 (13.3%)

2 (13.3%)

50%

(Table 4).

27 7

, 3

**Table 3.** Medical therapy in patients with myocardial bridges

	No	%
Antianginal therapy		
Calcium blocker	26	57.7
Beta blocker	23	51.1
Nitrate	9	20.0
Monotherapy	30	66.7
Dualtherapy	11	24.4
Tripletherapy	2	4.4
Nitrates	9	
with calcium blocker	4	
with beta blocker	5	

**Table 4.** Long term follow-up of patients with systolic compression less than 50% (Group A) or more than 50% (Group B)

	Group A	Group B	Total
No pain (%)	19 (78.6)	8 (53.3)	27 (67.7)
Atypical chest pain (%)	2 (8.0)	3 (20.0)	5 (12.5)
Effort-induced chest pain (%)	3 (12.0)	2 (13.3)	5 (12.5)
Chest pain at rest (%)	1 (4.0)	2 (13.3)	3 (7.5)
Myocardial infarction (%)	0 (0.0)	0 (0.0)	0 (0.0)
Cardiac death (%)	0 (0.0)	0 (0.0)	0 (0.0)
Total number (%)	25 (89.2)	15 (88.2)	40 (88.8)

P = NS

#### 고 안

#### 심근교의 빈도

5%

50%

5-9)

0.5 1.6%

0.95%

10)11)

Angelini 12)

가

가 , Polacek 8)

가 . 가 가  
, Ferreira <sup>5)</sup> 가  
가  
(superficial)  
, , (deep) 심근교와 심근허혈  
, (intravascular ultrasound :  
IVUS) <sup>17)</sup>  
, 가  
(milking effect) . , <sup>13)</sup>  
. (se -  
verity) . 가  
관동맥 조영술상 이환 부위와 특징  
가  
가  
( 가 )  
<sup>12 - 14)</sup>  
가  
. rat tail'  
saw fish'  
가 <sup>15)</sup>  
비후성 심근증과 연관성  
Ishimori <sup>11)</sup> Noble <sup>10)</sup>  
, , <sup>12)21)</sup> 가  
가 , Kitazume 가  
<sup>16)</sup> 658 81 (12%) 가  
가 66 가  
22 (30%) 가  
가 1 가가  
. <sup>12)22)23)</sup> Pichard <sup>24)</sup>  
ST  
great cardiac vein  
. Ge <sup>17)</sup>  
IVUS  
<sup>16)</sup> 가  
, peak velocity

가

14 , 6)7)28)29)32)33)

12 (86%)

가 가 34)35)

Risse 25) (406.6  $\mu$ m)

(66.3  $\mu$ m)

Polacek 8)

Q 36)

37)

Morales 37) 3

(sclerotic plaques)

Q 가

Boucek 26) glycosami - 4

noglycan <sup>35</sup>SO<sub>4</sub> 3

가 가 가

thiouracil 27)

acek 8)

Vassan 38) Pol -

가

가

가 17

ergonovine 1

8 (47.7%)

가 , Kodama 30) aceth - , thallium

ylcholine (80%) , Greenspan 39)

2 7 exercise thallium - 201 scan

가

가

치료 및 임상경과

가

Ishimori 11) Falicov 40)

임상적 의의 및 진단

가 40

60

Klamer 13)

Julliere 31) 가 가 Julliere 31) 8

가 4

가 13) 81 5

2 . Kramer

가 가 2 (4.4%) . 40 (88.8%)  
 14 ± 11 (4 40 )  
 27 (67.7%)  
 , 5 (12.5%)  
 2 5 (12.5%) , 3 (7.5%)

결 론 :

0.95% ,

18)21)42)43)

(cardiopulmonary bypass)

44)

## 요 약

중심 단어 :

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가 ,

방 법 :

1996 1 1999 3

4,694

Thallium SPECT

결 과 :

4,694 45

0.95% , 48 ± 11.0

30 , 15 2 : 1

(17 , 37.7%)

(12 , 26.6%) , 17 (37.7%)

8 (47.7%)

, 15 (33.3%) Thallium SPECT

12 (80%)

가 36 (80%) 가 , 5 (11.1%)

가 26

(57.7%), 가 23 (51.1%), 가

9 (20.0%) ,

가 30 (66.7%), 가 가 11 (24.4%),

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