

허혈성 심질환 환자에서의 관동맥 조영술 소견의 추적 관찰

김대경 · 임종윤 · 홍경순 · 박대균 · 두영철 · 한규록
유규형 · 오동진 · 고영박 · 이광학 · 이 영

Progression and Regression of Coronary Atherosclerosis-Clues to Pathogenesis from Serial Coronary Arteriography

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ABSTRACT

Background and Objectives : Identification of coronary sites susceptible to progression or nonprogression might provide additional information to select medical or surgical treatment and furthermore for appropriate timing for percutaneous transluminal coronary angioplasty or coronary artery bypass graft. **Methods :** We reviewed serial coronary arteriograms of 50 patients with coronary artery disease retrospectively. Patients were managed with standard treatment including anti-hypertensives, antiplatelets, lipid-lowering agents and other risk factor management by attending physician's decision. Patients who received percutaneous transluminal angioplasty, coronary artery bypass graft or thrombolysis were excluded. Coronary arteriographies were undertaken with average 33 months interval. Criteria for the progression and regression were the changes of the luminal diameter narrowing of the arterial segment by 20% or more reduction or increase, respectively. **Results :** Patients show progressive change, regressive change or no significant interval change in 50%, 12% and 30% of total 50 patients, respectively. Male gender, angiographic interval were the significant predictor of progressive change. In terms of coronary segment, stable segments are most frequent 52.2% (72/138) and progression in 40.2% (74/184), regression in 27.5% (38/138). Initial coronary lesions with low grade stenosis (less than 50%) have a tendency to progress than that of high grade stenosis (70% or more) Percentage diameter stenosis of new lesion are not related linearly with the interval between two sequential angiographies. **Conclusion :** Number of patients with progressive coronary arteriogram are more frequent than the patients with regressive change or no interval change. Progression and regression are frequent finding of serial coronary arteriography in usual clinical practice. Progression and regression are found frequently in the same patient at different coronary branches (16 patients). It suggested that the local factors may play an important role in the pathogenesis of coronary artery disease as well as systemic risk factors. (**Korean Circulation J 1999;29(4):374-381**)

KEY WORDS : Progression · Regression · Coronary atherosclerosis · Medical treatment.

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서 론

가 ,
가 ,
가 가 가 .⁷⁾

방 법

가 50
20
(Lt main), (intermedius),
가 1-3)
, , , septal perforator, 1
(1st diagonal) , 2 (2nd diagonal) ,
가 3 (3rd diagonal) ,
, , 1 (obtuse marginal),
2 , 3
4-6)
5)

대상 및 방법

대 상
1986 1996 95%
1 20% . 1)
50 20% 가
가 61 가 34 , 2)
가 16 . 20%
35 , 5 , 3) 20% 4) 20%
10
가
(stenosis grade)
가 Grade (<50%), Grade (50-69%), Grade
(70-89%), Grade (>90%) (Table 5)

short, long(>20 mm),
smooth, irregular segments

50

(body mass index),

student t - test Mann - Whitney test
Fisher's Exact test
0.05

결 과

50
63 , 58 ,
33 12
73 가 34 ,
가 16
50
60% 30
12% 6 28% 14
16
(Fig. 1).
(+)
가
39
가
27
(Table 1).

77.8%가 22.2%
(p=0.004)(Table 2).

가 (Table 3 and 4).

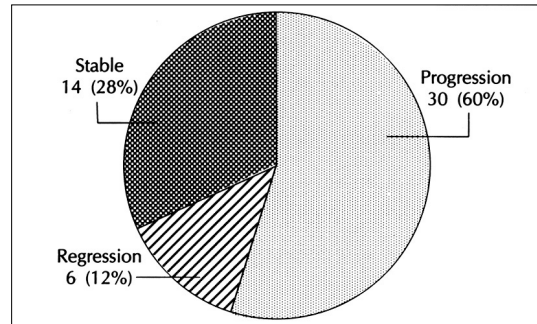


Fig. 1. Patients distribution according to progression or regression of atherosclerosis.

Table 1. Comparison of continuous variables for coronary artery disease between non progression group and progression group

Variable	Mean \pm standard deviation		p value
	Nonprogression (n = 20)	Progression (n = 30)	
Age	57.7 \pm 7.3	62.9 \pm 10.8	.059
BMI*	24.3 \pm 3.1	23.4 \pm 2.8	.240
CAG [†] interval	27.9 \pm 20.3	39.1 \pm 17.9	.044
LDL [‡]	106.86 \pm 28.46	112.48 \pm 28.34	.493
HDL [§]	41.70 \pm 9.48	44.67 \pm 8.67	.255

* : Body mass index = body weight (kg)/height (m)²

[†] : Coronary angiography (months)

[‡] : Low density lipoprotein

[§] : High density lipoprotein

Table 2. Comparison of discrete variables for coronary artery disease between non progression group and progression group

Variables	Non progression (n = 20)	Progression (n = 30)	² value	p value
Gender female	10 (47.6%)	7 (23.3%)	3.279	.044
male	11 (52.4%)	23 (76.7%)		
Diabetes no	19 (90.5%)	22 (73.3%)	2.303	.167*
yes	2 (9.5%)	8 (26.7%)		
Hyper- no	10 (47.6%)	15 (50.0%)	0.028	1.000
yes	11 (52.4%)	15 (50.0%)		
Smoking no	12 (57.1%)	11 (36.7%)	2.092	.167
yes	9 (42.9%)	19 (63.3%)		

* : Fisher's exact test

관동맥 병변의 위치에 따른 분석

1000 138
28 (20.3%)
38 (27.5%) 72

Table 3. Comparison of continuous variables for coronary artery disease between regression group and progression group

Variable	Mean ± standard deviation		p value*
	Regression (n = 6)	Progression (n = 30)	
Age	63.0 ± 7.8	62.9 ± 10.8	.827
BMI†	22.8 ± 2.1	23.4 ± 2.8	.456
CAG‡ interval	34.2 ± 21.4	39.1 ± 17.9	.405
LDL§	110.33 ± 24.19	112.48 ± 28.34	.965
HDL	38.08 ± 9.22	44.68 ± 8.52	.156

* : Statistical test by Mann-Whitney U test
† : Body mass index = body weight (kg)/height (m)²
‡ : Coronary angiography (months)
§ : Low density lipoprotein
: High density lipoprotein

Table 4. Comparison of discrete variables for coronary artery disease between regression group and progression group

Variables	Regression (n = 6)	Progression (n = 30)	² value	p value*
Gender	female 3 (50.0%)	7 (23.3%)	1.772	.317
	male 3 (50.0%)	23 (76.7%)		
Diabetes	no 5 (83.3%)	22 (73.3%)	0.267	1.000
	yes 1 (16.7%)	8 (26.7%)		
Hyper-tension	no 3 (50.0%)	15 (50.0%)	0.000	1.000
	yes 3 (50.0%)	15 (50.0%)		
Smoking	no 3 (50.0%)	11 (36.7%)	0.374	.658
	yes 3 (50.0%)	19 (63.3%)		

* : Fisher's exact test

(52.2%) 7† .
20.8%(11/53),
17.5%(7/40),
22.2%(10/45)
(Fig. 2).

26.4%
(14/53), 30.0%(12/40) 52.8%(28/
26.7%(12/45) 53), 52.5%(21/40),
(Fig. 3). 51.1%(23/45)
861 46 (Fig. 6).

4.6%(18/396 74
) 4.2%(11/260), 10.8%(27/250), 6.4%
8.3%(17/205) (29/450), 6%(18/300)
(Fig. 4),
15%(11/74), 12%
(Fig. 5). (9/74) .

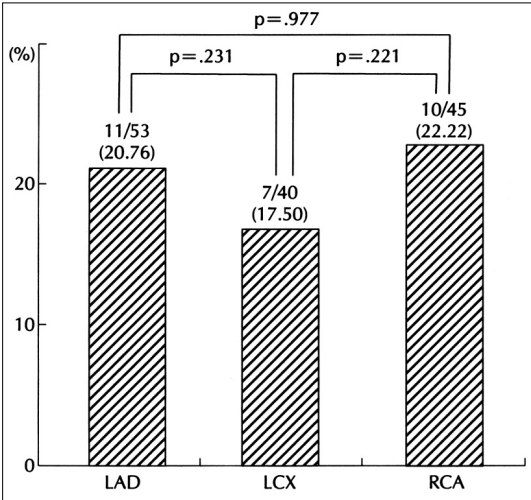


Fig. 2. Progression in the coronary arteries.

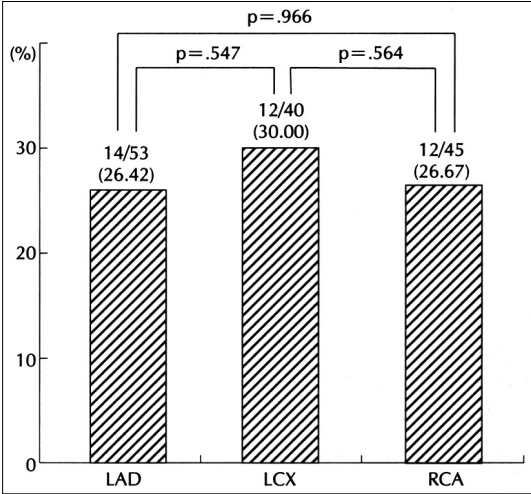


Fig. 3. Regression in the coronary arteries.

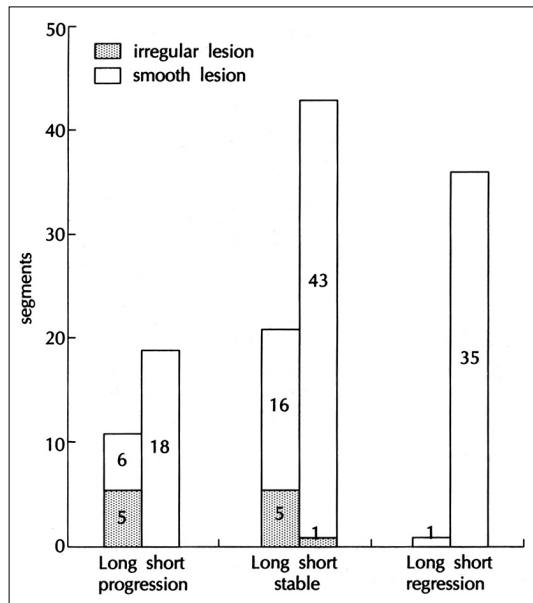


Fig. 7. Relation between lesion characteristics and diameter change of coronary lesions.

8)

30 (60%)
 , 6 (12%)
 (28%)

14
 가

39
 (p = 0.044).

27
 가

가 Ishikawa ⁹⁾ 227
 35 32%
 Moise ¹⁰⁾ 313
 44% , Kramer ¹¹⁾ 317

18)
 material)
 stress

30 56%
 Nobuyoshi ¹²⁾
 , Kramer
 Bruschke ¹³⁾
 Jost ¹⁴⁾ 3 mm
 가 가
 가 2 mm segment
 , Rosch ¹⁵⁾
 ulcerating plaque
 (5 20 mm) 가
 short eccentric,
 diffuse
 가
 Ornish ¹⁶⁾
 가 50%
 가
¹⁴⁾¹⁶⁾ Davies ¹⁷⁾
 가
 가
 Hani
 (contrast
 , 가 , shear
 , Seymour ¹⁹⁾

branching, bifurcation, bending 50 33
 (12 73)
 , shear stress
 tensile strength (circulating ma-
 terial) 가 60%(30/50)
 . Arntzenius ³⁾ 30%(14/50) 12%(6/50)
 .
 112 mg/dl, 106 mg/dl 33
 . Ornish ¹⁶⁾ ,
 , 가 가 52.2%(72/138) , 27.5%
 (38/138), 40.2%(74/184) .
 6
 138 38 (27.5%) ,
 (remodeling) .
 Greg Brown ²⁰⁾ , 가 50% . 46
 가 cardiac events
 가
 가
 , , , , 가
 , , 가
 가

중심 단어 : . . .

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요 약

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