

Aspirin과 Ticlopidine 병합 요법 기간의 관상동맥 스텐트 재협착에 대한 효과

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= Abstract =

The Effects of Therapeutic Duration of Combined Antiplatelets, Aspirin and Ticlopidine, on Coronary Stent Restenosis

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Background : One of most important mechanisms of coronary stent restenosis is neointimal hyperplasia. Although the process of neointima formation is not fully understood, a special role has been advocated for adherent platelets. Previous studies have shown a clear benefit with combined antiplatelet therapy such as aspirin plus ticlopidine in reducing the rate of thrombotic occlusions of stented vessels. The purpose of this study was to evaluate the effects of duration of antiplatelet regimens on coronary stent restenosis.

Methods : After successful placement of coronary artery stents in 222 patients, we performed follow-up coronary angiograms in 99 patients(42.3%). Forty-six patients were randomly assigned to receive aspirin and ticlopidine for four weeks(Group : 54 ± 9 years : M 38, F 8) and 48 patients for 6 months(Group : 58 ± 8 years : M 38, F 10).

Results : There were no significant differences in clinical and procedural variables or coronary lesion characteristics before and after stenting. At 6 months after stenting, minimal luminal diameter was 2.16 ± 0.93 mm in Group and 2.04 ± 1.07 mm in Group ($p = 0.57$). Late lumen loss was 0.80 ± 1.07 mm in Group and 0.92 ± 1.11 mm($p = 0.58$) in Group . The stent restenosis rate of Group at 28.3% and that of Group at 29.2% were not statistically significant between the two groups($p = 0.92$).

Conclusions : The therapeutic duration of combined antiplatelet regimen with aspirin and ticlopidine after coronary stent does not affect stent restenosis rate.

KEY WORDS : Coronary stent · Restenosis · Combined antiplatelets.

aspirin ticlopidine

서 론

1986 Sigwart¹⁾

연구 대상 및 방법

1. 대상 환자

가 2-4). 1996 1 1997 8
222 aspirin tic-
lopidine 1 6
94
aspirin ticlopidine
4 aspirin 6 46
(: 54 ± 9 : 38, 8), aspirin
ticlopidine 6 48
(: 58 ± 8 : 38, 10)

2. Stent 시술 방법

Aspirin cyclooxygenase
thromboxane A₂
300mg aspirin 500mg ticlopidine
10,000 Unit
Stent
Palmaz - Schatz, Microstent , Freedom
stent
11
b/ a 10,11).

3. 추적 관찰

aspirin ticlopidine 12-18). , ticlopidine
19),
ticlopidine 50%
gain
, late loss

loss index acute gain late $\pm 13\%$, $64 \pm 11\%$ (Table 1).

4. 통 계 \pm 35 (72.9%) 가 32 (69.6%),
unpaired t - test, chi - square test 7 (15.2%), 4 (8.3%) ,
, p 0.05 7 (15.2%), 9 (18.8%)

결 과

1. 대상환자의 임상적 특성

3 , 6 ± 3 . $6 \pm$ Palmaz - Schatz stent, Microstent, Freedom stent
16 (34.8%), 14 (29.2%) , 가 . Stent
21 (45.7%), elective stenting 23 (50.0%),
27 (56.3%) 23 (47.9%) 가 ,
8 (17.4%), 14 (29.2%) ,
8 (17.4%), 5
22 (47.8%), 25 (52.1%), (10.4%) , 7 (15.2%), 6
14 (30.4%), 17 (35.4%), (12.5%) (Table 2).
15 (32.6%), 22 (45.8%), 5
(10.9%), 10 (20.8%)

3. 추적 관상동맥 조영술 결과

60 mm, $10.8 \pm 6.3\text{mm}$ 11.0 ± 5.2 가

Table 1. Baseline clinical characteristics

	Group (Aspirin+Ticlopidine for 4 weeks, n = 46)	Group (Aspirin+Ticlopidine for 6 months, n = 48)	p
Age (years)	54 \pm 9	58 \pm 8	NS
Sex (male/female)	38 / 8	38 / 10	NS
Ejection fraction (%)	60 \pm 13	64 \pm 11	NS
Clinical diagnosis (%)			NS
Acute myocardial infarction	16 (34.8)	14 (29.2)	
Old myocardial infarction	5 (10.9)	5 (10.4)	
Unstable angina	21 (45.7)	27 (56.3)	
Stable angina	4 (8.7)	2 (4.2)	
Risk factor (%)			
Current smoker	22 (47.8)	25 (52.1)	NS
Hypercholesterolemia	14 (30.4)	17 (35.4)	NS
Hypertension	15 (32.6)	22 (45.8)	NS
Diabetes mellitus	5 (10.9)	10 (20.8)	NS

Values are expressed as mean value \pm SD or number (%) of patients.

Table 2. Target lesion characteristics

	Group (Aspirin+Ticlopidine for 4 weeks, n = 46)	Group (Aspirin+Ticlopidine for 6 months, n = 48)	p
Vessels of target lesions (%)			NS
LAD	32 (69.6)	35 (72.9)	
LCX	7 (15.2)	4 (8.3)	
RCA	7 (15.2)	9 (18.8)	
ACC/AHA lesion classification (%)			NS
Type A	5 (10.9)	3 (6.3)	
Type B ₁	16 (34.8)	22 (45.8)	
Type B ₂	12 (26.1)	14 (29.2)	
Type C	13 (28.3)	9 (18.8)	
Number of diseased vessels			NS
1	25 (54.3)	24 (50.0)	
2	17 (37.0)	21 (43.8)	
3	4 (8.7)	3 (6.3)	
Indications for stenting (%)			NS
Elective	23 (50.0)	23 (47.9)	
Restenosis	8 (17.4)	14 (29.2)	
Suboptimal PTCA	8 (17.4)	5 (10.4)	
Bailout	7 (15.2)	6 (12.5)	
Types of stent			NS
Palmaz-Schatz stent	19 (41.3)	16 (33.3)	
Microstent	18 (39.1)	17 (35.4)	
Freedom stent	3 (6.5)	12 (25.0)	
Others	6 (13.0)	3 (6.3)	

LAD : left anterior descending artery LCX : left circumflex artery RCA : right coronary artery
 ACC/AHA : American College of Cardiology/American Heart Association
 PTCA : percutaneous transluminal coronary angioplasty

2.1%
 0.93 ± 0.47mm, 0.97 ± 0.44mm , 1 ,
 2.95 ± 0.69mm, 2.96 ± 0.90mm 1
 2.16 ± 0.93mm, 2.04 ± 1.07 1 가
 mm . Acute gain 2 1 가
 2.02 ± 0.84mm, 1.99 ± 0.85mm
 late loss 0.80 ± 1.07mm, 가
 0.92 ± 1.11mm . Loss index 1 2.1% (Table 4).
 0.42 ± 0.56, 0.48 ± 0.68
 28.3%, 29.2% 고 안
 (Table 3).

4. Stent 시술 후 합병증

1 가 1977 Gruentzig²⁰⁾
 가 , 1 (PTCA : percutaneous transluminal coronary

Table 3. Quantitative coronary angiographic data

	Group (Aspirin+Ticlopidine for 4 weeks, n = 46)	Group (Aspirin+Ticlopidine for 6 months, n = 48)	p
Before stenting			
Reference diameter (mm)	2.74 ± 0.70	2.88 ± 0.82	NS
MLD (mm)	0.93 ± 0.47	0.97 ± 0.44	NS
Diameter stenosis (%)	66.8 ± 14.9	66.0 ± 15.3	NS
Immediately after stenting			
Reference diameter (mm)	3.09 ± 0.78	3.09 ± 0.67	NS
MLD (mm)	2.95 ± 0.69	2.96 ± 0.90	NS
Diameter stenosis (%)	6.3 ± 18.0	4.3 ± 18.4	NS
At 6-month follow-up			
Reference diameter (mm)	3.20 ± 0.86	3.03 ± 0.74	NS
MLD (mm)	2.16 ± 0.93	2.04 ± 1.07	NS
Diameter stenosis (%)	33.2 ± 25.4	35.0 ± 28.4	NS
Acute lumen gain (mm)	2.02 ± 0.84	1.99 ± 0.85	NS
Late lumen loss (mm)	0.80 ± 1.07	0.92 ± 1.11	NS
Loss index	0.42 ± 0.56	0.48 ± 0.68	NS
Restenosis rate (%)	28.3	29.2	NS

MLD : minimal luminal diameter

Table 4. Complications

	Group (Aspirin+Ticlopidine for 4 weeks, n = 46)	Group (Aspirin+Ticlopidine for 6 months, n = 48)	p
Acute occlusion	0 (0.0)	1 (2.1)	NS
Subacute stent thrombosis	1 (2.2)	1 (2.1)	NS
Acute myocardial infarction	1 (2.2)	0 (0.0)	NS
Vascular complication	1 (2.2)	1 (2.1)	NS
Side effects			
Leukopenia	0 (0.0)	0 (0.0)	NS
Skin rash	0 (0.0)	2 (4.2)	NS
Gastritis	0 (0.0)	1 (2.1)	NS
Toxic hepatitis	1 (2.2)	1 (2.1)	NS

angioplasty)

21 - 23)

90%

24 - 27),

가

2 - 4).

ARTS(Arterial Revascularization

5,6).

Therapy Study) trial SOS(Stent or Surgery)

28).

trial

1986

Sigwart¹⁾

29 - 31),

32,33)

가 .

1996 47% 1993 Colombo warfarin

34,35)

BENESTENT 1 2

STRESS 39 - 42)

20 30% 36,37) 가

28.7%

가 43 - 45)

(neointimal hyperplasia) 1995

ACCIP (Ame -

7,8) rican College of Chest Physicians)

46) aspirin 325mg

2 160 325mg

, heparin ACT

(activated clotting time)가 300 350

warfarin, low mo -

lecular weight heparin ticlopidine aspirin

가 aspirin ticlopidine 12 - 18)

cyclooxygenase thromboxane A₂

cyclooxygenase

Aspirin cyclooxygenase 19) aplasia,

cyclooxygenase aspirin 9) ticlopidine

prostacyclin Ticlopidine

ADP(adenosine diphosphate) aspirin ticlopidine

fibrinogen 2 , 1 , 2 가

serotonin (<500/mm³)

b/ a 2 2

4 (4.3%)

10,11) ticlopidine 4

6

6

warfarin aspirin ticlopidine

0.6% 6.4%

38) heparin warfarin

2.1%

36,37,47) 0.5 29%

28.3% 29.2% , aspirin ticlopidine
ISAR
가 , aspirin ticlopidine 1
48)
aspirin ticlopidine 4
6
가

요 약

연구배경 :
가 , aspirin ticlopidine
 , ticlopidine
가 .
aspirin ticlopidine
방 법 :
1996 1 1997 8
222
94
aspirin ticlopidine 4
(: 54 ± 9 : 38, 8) 6
(: 58 ± 8 : 38, 10)

결 과 :
 6 ± 3 , 6 ± 3
 $2.16 \pm 0.93\text{mm}$, $2.04 \pm 1.07\text{mm}$ ($p = 0.57$), late lumen loss $0.80 \pm 1.07\text{mm}$,
 $0.92 \pm 1.11\text{mm}$ ($p = 0.58$), 28.3%,
29.2% (p=0.92).

결 론 :

aspirin ticlopidine

감사의 글 _____
1996

1996

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