

Cilostazol과 Ticlopidine이 관상동맥 스텐트 재협착증의 예방에 미치는 영향 비교

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A Randomized Comparison of Cilostazol Versus Ticlopidine Therapy after Elective Coronary Stent Implantation

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ABSTRACT

Background : Percutaneous transluminal coronary angioplasty (PTCA) is a widely acceptable treatment for ischemic heart disease. However, restenosis after successful PTCA, which develops in 20 -30% of all patients, remains a serious late complication. This study was performed to compare the efficacy of cilostazol with that of ticlopidine for the prevention of stent restenosis. **Materials and Methods :** Fifty three patients who had undergone coronary stent implantation were divided into group A (n = 25) receiving 100 mg aspirin and 200 mg cilostazol and group B (n = 28) receiving 100 mg aspirin and 500 mg ticlopidine, between Sep 1998 and Feb 1999 at Pusan Paik Hospital, Inje University. Clinical and laboratory evaluations were performed at regular intervals. **Results :** There were no differences in baseline characteristics between the two groups. Coronary artery restenosis was observed in 5 (20.8%) patients of group A and 8 (26%) of group B, a difference which was not statistically significant ($p = NS$). The minimal luminal diameter was 2.10 ± 0.89 mm in group A and 1.93 ± 0.65 mm in group B ($p = NS$). Two patients in group A complained of headaches, while 6 (21.4%) patients of group B developed side effects including thrombocytopenia in 2 patients, and skin rash in 2 patients (Ed- what of the remaining 2 patients with side effects in group B?). No instances of cardiac death occurred during the follow-up period. **Conclusion :** The findings of this study suggest that aspirin plus cilostazol may be a safer as well as an equally antithrombotic regimen, compared to that of aspirin plus ticlopidine, for recovery after elective coronary stent implantation. (**Korean Circulation J 2001;31(8):780-787**)

KEY WORDS : Coronary artery stent · Restenosis · Cilostazol · Ticlopidine.

서 론

nal Coronary Angioplasty, PTCA)

(Percutaneous Translumi -

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PTCA (elastic re-coil),²⁾ , PTCA , , (< 150,000/mm³), , (2 mg/dl) .

³⁾ 가 PTCA 방 법 가 .⁴⁻⁶⁾ , , 6

ticlopidine , ACC/AHA(American College of Cardiology/American Heart Association)²⁷⁾ .

ticlopidine 가 ticlopidine ,

가 .⁷⁾ A cilostazol B 3

Cilostazol phosphodiesterase type A ticlopidine , 8 , 4

ti -

clopidine . , 가 1 : 1

⁸⁻¹⁰⁾ cilostazol , ,

ticlopidine 가 1.15 : 1

12 14 ,

대상 및 방법

대상 환자 2 4

1998 9 1999 2

53 6 50

50% , A 24 (25

53) , B 26 (28) .

A 25

3 8 100 mg

cilostazol 200 mg B 28 3

4 100 mg ticlopidine 500

mg 50% TIMI(Thrombolysis in Myocardial Infarction)

24
 , 1
 .
 50%
 .
 통계 처리
 Mann - Whitney U test , p<
 0.05
 ±
 .
 결 과

대상 환자군의 임상적 특징
 A 25 (20 , 5 , 55 ± 9
) 27 , A 28 (22 , 6 ,
 59 ± 10) 32
 A 14 (56%)
 7 (28%), 4 (16%) , B
 17 (61%), 7 (25%), 4
 (14%) (Table 1).

관상동맥 조영술상 병변혈관의 특징
 (ACC/AHA) A A 4
 (14.8%), B₁ 10 (37.0%), B₂ 9 (33.3%)
 C 4 (14.8%) , B 4 (12.5%),
 12 (37.5%), 7 (21.9%), 9 (28.1%)
 , A
 4 (14.8%), 1 (3.
 7%) suboptimal 13 (48.1%), bailout 9 (33.3%),
 B 9 (28.1%), 0 (0.0%), 21 (65.
 6%), 2 (6.3%) , 6 53
 50 가 ,
 A 24 (25) , B 26 (28) (Ta-
 ble 2).

추적관찰 관상동맥 조영술 소견
 reference diameter A 3.
 9 ± 0.57 mm, B 3.12 ± 0.36 mm ,
 가 .

Table 1. Baseline clinical characteristics of patients

	Group I (Aspirin+ Cilostazol)	Group B (Aspirin+ Ticlopidine)	p
Number (Lesion number)	25 (27)	28 (32)	
Age (years)*	55 ± 9	59 ± 10	NS
Sex (male/female)	20/5	22/6	NS
Clinical diagnosis (%)			NS
Acute myocardial infarction	14 (56.0)	17 (61.0)	
Unstable angina	7 (28.0)	7 (25.0)	
Stable angina	4 (16.0)	4 (14.0)	
Risk factor (%)			NS
Current smoker	17 (68.0)	15 (53.0)	
Hypercholesterolemia	15 (60.0)	13 (46.0)	
Hypertension	7 (28.0)	13 (46.0)	
Diabetes mellitus	6 (24.0)	3 (11.0)	

Data are expressed as * : Mean ± SD
 NS : no significance

Table 2. Target lesion characteristics in patients

	Group I (Aspirin + Cilostazol)	Group B (Aspirin + Ticlopidine)	p
Number (Lesion number)	25 (27)	28 (32)	
Vessels of target lesions (%)			NS
LAD	16 (59.3)	14 (43.8)	
LCx	2 (7.4)	6 (18.8)	
RCA	9 (33.3)	12 (37.5)	
ACC/AHA lesion type (%)			NS
A	4 (14.8)	4 (12.5)	
B ₁	10 (37.0)	12 (37.5)	
B ₂	9 (33.3)	7 (21.9)	
C	4 (14.8)	9 (28.1)	
Indications for stenting (%)			NS
Elective	4 (14.8)	9 (28.1)	
Restenosis	1 (3.7)	0 (0.0)	
Suboptimal	13 (48.1)	21 (65.6)	
Bailout	9 (33.3)	2 (6.3)	
Types of stent (%)			NS
GFX stent	25 (92.6)	31 (96.9)	
Nir primo stent	2 (7.4)	1 (3.1)	
Follow-up number (Lesion number)	24 (25)	26 (28)	

LAD : left anterior descending artery, LCx : left circumflex artery, RCA : right coronary artery, ACC/AHA : American College of Cardiology / American Heart Association, NS : no significance

Table 3. Coronary angiographic data in follow-up patients

	Group I (Aspirin + Cilostazol)	Group B (Aspirin + Ticlopidine)	p
Before stenting	[n = 25]	[n = 28]	
Reference diameter (mm)	3.19 ± 0.57	3.12 ± 0.36	NS
MLD (mm)	0.66 ± 0.28	0.75 ± 0.36	NS
Diameter stenosis (%)	79.02 ± 7.68	74.82 ± 11.17	NS
Immediately after stenting	[n = 25]	[n = 28]	
Reference diameter (mm)	3.20 ± 0.55	3.15 ± 0.35	NS
MLD (mm)	3.30 ± 0.39	3.18 ± 0.27	NS
Diameter stenosis (%)	- 4.52 ± 11.58	- 1.80 ± 12.03	NS
At 6-month follow-up	[n = 24]	[n = 26]	
Reference diameter (mm)	3.17 ± 0.58	3.13 ± 0.39	NS
MLD (mm)	2.10 ± 0.89	1.93 ± 0.65	NS
Diameter stenosis (%)	36.03 ± 23.93	39.74 ± 23.35	NS
Acute lumen gain (mm)	2.62 ± 0.35	2.43 ± 0.51	NS
Late lumen loss (mm)	1.12 ± 0.71	1.26 ± 0.57	NS
Restenosis (%)	20.8	26.0	NS

MLD : minimal luminal diameter, Data are expressed as * : Mean ± SD

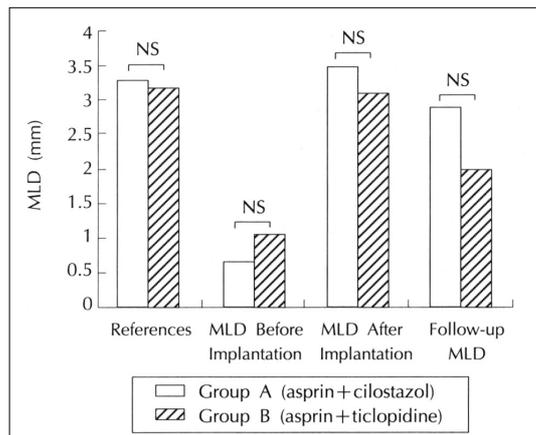


Fig. 1. Reference diameter measurement and minimal lumen diameter (MLD measurements before and after stent implantation and at follow-up were not different between two groups [groups A (aspirin + cilostazol), groups B (aspirin + ticlopidine)]. NS : No Significance.

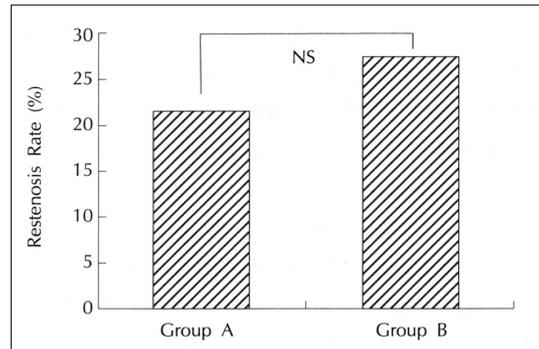


Fig. 2. Restenosis rates of group A (aspirin + cilostazol) and group B (aspirin + ticlopidine) were not different between two groups. NS : No Significance.

가 (Table 3, Fig. 2).

부작용

A 2 ,
B 4 2 가
(Table 4).

고 찰

1977 Gruenzig ¹²⁾ PTCA
PTCA가

PTCA

(minimal luminal diameter, MLD)
A 0.66 ± 0.28 mm B 0.75
± 0.36 mm 가 .
6 , 6
A MLD 2.10 ± 0.89
mm , B 1.93 ± 0.65 mm
가 (Table 3, Fig. 1).
6
A 20.8%, B 26%

Table 4. Complications in Group A (Aspirin + Cilostazol) and Group B (Aspirin + Ticlopidine)

	Group A (Aspirin + Cilostazol)	Group B (Aspirin + Ticlopidine)
Number	24	26
Complication		
Subacute thrombosis	0	0
Death	0	0
Emergent CABG	0	0
Thrombocytopenia	0	4
Headache	2	0
Rash	0	2

Data are expressed as * : Mean ± SD
NS : no significance, n : patient number

1) PTCA (elastic re-coil),²⁾ balloon PTCA
가 cytokine (extracellular matrix) PTCA
가 thromboxane
29) PTCA 가 balloon PTCA (ar-terial remodeling)
Mintz³²⁾ balloon PTCA, directional atherectomy (DCA), rotational atherectomy, excimer laser angioplasty

212

가 73%가 , 27% balloon PTCA DCA OARS (Operational Atherectomy Result Study) SURE (Serial Ultrasound analysis of Restenosis)

가³²⁾³³⁾ 가 ,
가 ,
21-25) (final lumen cross-sectional area)
32)33) balloon PTCA 가
BENESTENT¹¹⁾ STRESS¹²⁾ balloon PTCA
42 32% 32 22%

가 가 20 30%
Hoffmann³³⁾
가¹⁶⁾¹⁷⁾

가
 . Bae ⁷⁾ cilostazol
 134

²⁶⁾
 + cilostazol 18.8% , +
 ticlopidine 37.0% + cilostazol

(異) 24
 2 Park ²⁶⁾ cilostazol
 cilostazol 255 ,
 ticlopidine 244 ,
 ticlopidine 6 86%, 80%
 1 3% warfarin , cilosta -
 ticlopidine zol ticlopidine
 가 , ci -
 , 5 30% , lostzol ticlopidine
 가
 , ¹³⁾¹⁴⁾ .
 Cilostazol phosphodiesterase type lostzol ticlopidine
 cAMP 가 20.
 . Kubota 8% ticlopidine 26% .
³⁶⁾ Gianturco[®] cilostazol 2
 cilostazol , ,
 Yamaski ³⁷⁾ cilst -
 35 Palmaz - Schatz[®] azol ticlopidine
 17 , 18 cilostazol
 , cilostazol .
 cilostazol pr -
 obucol , ,
 31.7%,
 probucol 16.7%, cilostazol 12.5% pr -
 obucol cilostazol 9.5% .
³⁸⁾ Da - 요 약
 wson ³¹⁾ cilostazol
 연구목적 :
 가 . Pratie ³⁹⁾ , ,
 residual plaque burden .
 가 ticlopidine cilostazol
 ticlopidine 1 6

대상 및 방법 :
 1998 9 1999 2
 53 A
 25 (27) 3 8
 100 mg cilostazol 200 mg , B 28
 (32) 3 4
 100 mg ticlopidine 500 mg
 6
 결 과 :
 A 5 (20.8%), B 8
 (26%)
 , A
 2.10 ± 0.89 mm, B 1.93 ± 0.65 mm
 , A 2
 , B 4 , 2
 가
 결 론 :
 cilostazol
 ticlopidine
 ticlopidine
 중심 단어 : Cilostazol · Ti-
 clopidine.

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