

관상동맥질환의 약물치료

Medical Management of Coronary Artery Disease

7 761 - 1

Byung Ok Kim, M.D.

Department of Internal Medicine

Inje University College of Medicine, Sanggye Paik Hospital

E - mail : bokjektae@sanggyepaik.ac.kr

Abstract

Coronary artery disease is manifested by angina, acute myocardial infarction, sudden cardiac death, and heart failure and classified into chronic stable angina and acute coronary syndrome by pathogenesis. Acute coronary syndrome begins with the rupture of an unstable atheromatous plaque and the formation of intra - coronary thrombus. It is classified into unstable angina, non - Q wave myocardial infarction, and Q wave myocardial infarction by the severity of disturbance of coronary blood flow, the presence of myocardial injury, and the electrocardiographic (ECG) manifestations. The therapeutic strategies of acute coronary syndrome depends on the presence of ST segment elevation on ECG. Patients presenting with ST segment elevation myocardial infarction (STEMI) are candidates for reperfusion therapy (either pharmacological or catheter - based) to restore the flow in the occluded epicardial infarct - related artery. Patients presenting without ST segment elevation (NSTEMI) are not candidates for pharmacological reperfusion and should receive anti - ischemic therapy. Anti-thrombin and anti - platelet therapy should be administered to all patients with an acute coronary syndrome. The therapeutic strategies of chronic stable angina are to prevent myocardial infarct or death, and to control the ischemic symptoms. The new insights on the pathogenesis of coronary atherosclerosis will change the preventive measures against cardiovascular events. We have to pay attention not only to the conventional measures such as reducing the LDL cholesterol level, correcting hypertension, and prescribing anti - platelet agents, but also to the new measures such as reducing non - HDL cholesterol, and lifestyle modifications.

Keywords : Coronary artery disease; Medical management; Acute coronary syndrome; Angina; Risk factor

: ; ; ;

(Thrombolysis),

(Primary PTCA)

가

가

(1).

Plasminogen

plasmin

plasminogen activator plas-
min fibrin fibrin degradation
product

. Uroki-
nase, t - PA(alteplase)

가

bolus 가가 ,

PAI - 1

ST

TNK - tPA, tenecteplase

- 가 12 2000 ACC/AHA guideline
2 0.1 mV ST (UA/NSTEMI)
ST bundle branch 가 (5).
block 12 (early conservative strategy)
가 가 75 .
ST (UA/NSTEMI) (angina at rest, or with minimal activity or dynamic ST - segment changes)
가
V₁ - V₄ ST stress
가 (early invasive
(2). strategy) 가 12~24
Accelerated alteplase regimen 15 mg bolus
0.75mg/kg 30 , 0.5 mg/kg 60 (<35
mg) GUSTO - I 가 가
90 (TIMI or) 81%, 30 FRISC II TACTICS - TIMI 18
6.3% streptokinase 90
73%, 30 7.3% (PCI)
가 (3). , 2,200
Weight - adjusted dose of tenecteplase(30, 40, and TACTICS - TIMI 18
50 mg) ASSENT 1 aspirin, heparin, GP b/ a (tirofiban)가
(1). 6
ASSENT 2 single - bolus tenecte - , , 가
plase accelerated dose t - PA 19.4%
가 , 4 15.9%
tenecteplase (7.0%) t - PA troponin ST
(9.2%) intermediate high risk
(4). (6).

ACC/AHA (2002) (Class). bo 가 ,
 (1) 가 UA/ 96 (9.1% vs 7.6%, p=0.01) 30
 NSTEMI early invasive strategy 가 (15.7% vs 14.2% p=0.042) eptifibatide
 (GP b/ a
 troponin T 가 , troponin T 가 가
 ST , , , ,
 40% ,
 , 6 PCI). (8). Abciximab(Reopro) EPIC
 (2) 가 early conserva-
 tive invasive strategy가 (6). 35% , EPILOG trial

2. ST / 가 .
 Glycoprotein b/ a Q abci-
 ST ximab GUSTO - ACS
 가 placebo (6).
 ST
 glycoprotein(GP) b/ a

PRISM - PLUS 1,915 (Thienopyridine)
 tirofiban , heparin
 tirofiban heparin
 , tirofiban 가 .
 tirofiban . ti-
 rofiban heparin
 7 ,
 가 (17.9% vs 12.9%
 p=0.004), tirofiban heparin 가 3 160 ~ 325 mg
 6 22%(p=0.03), 75 ~ 325 mg
 19%(p=0.02) (7).

PURSUIT 10,984 35 23% strep-
 aspirin heparin eptifibatide place- tokinase 42%

ISIS - 2(The Second International Study of Events) (11). Ticlo-
 Infarct Survival)(9) 가 , pidine 가
 75 ~ 325 mg .
 34%
 33% 가
 . cy-
 clooxygenase 가 thromboxane
 A2 thromboxane A2 93%, 52%
 75 mg 가 가 가
 가 , 50 ~
 160 mg 60% .
 Thienopyridine ADP
 가
 가 .
 , stent (2). 3 ~ 5
 가 가 aPTT
 . Ticlopidine(250 mg bid) 1.5 ~ 2.5 .
 unfractionated
 46% 2 unfractionated
 .
 thrombotic thrombocytopenic purpura가 . FRAXIS(nadroparin), FRIC,
 . Clopidogrel , FRISC, FRISC - (dalteparin), ESSENCE, TIMI -
 가 (enoxaparin)
 , ,
 87% CAPRIE(Clopidogrel ver- (12).
 sus Aspirin in Patients at Risk of Ischemic Events)
 (10)
 clopidogrel ,
 20% CURE 24 48 nitrates heparin
 (Clopidogrel in Unstable Angina to Prevent Recurrent . nitrate

24	48	24	,
	nitrate		
Heparin	Low Molecular Weight	가	NO S - nitro-
Heparin(LMWH)	,	thiol	guanylate cyclase
enoxaparin	unfractionated heparin	, c - GMP	c - GMP가
,	,		
(ESSENCE, TIMI -)		SH group	NO guanylate cyclase
			SH group
	Ticlopidine	clopidogrel	NO
		S - nitrothiol	
		(nitrate tolerance)	
		24 ~ 48	,
가		8 ~ 12	nitrate free
		interval	(1).
	nifedipine	1) Nitroglycerin	
dihydropyridine	가	,	
		,	
		,	
	ACE	가	
	가	0.3 ~ 0.6 mg	
	nitrate	5	0.3 mg 15
(1).		1.2 mg	
		,	40
		가	
1.	(Nitrates)	2) Isosorbide dinitrate	
	,	"first - pass hepatic effect"	
(preload)	(wall tension)	가	
			6

3) Isosorbide 5 - mononitrate

(pindol, acebutolol, celiprolol)

First - pass effect가

HDL cholesterol

30 2

가

4~6

가

(la-

betanol, carvedilol, bucindolol)

가

2. Nicorandil

3

Nicorandil ATP - sensitive potassium channel
operner nitrate nitrate NO
, K channel

10~30mg 2~3

가

3.

가

가

nitrates

가

24~48

beta - 1 receptor beta - 2 ade-
noreceptor
beta - 1 receptor

esmolol, metoprolol

가

50~60

beta - 2
receptor
(intrinsic sym-
pathomimetic activity)

4

4

5. ACE Angiotensin type 1 receptor blocker

ACE

1. (15).
 AHA/ACC guideline 2002 update
 ACE 가 prostacycline 가 , substance - P
 ACE , t - PA
 ACE 가 .
 norepinephrine 가
 ACE LDL cholesterol
 (16). 가 , HDL cholesterol .
 Angiotensin recep-
 tor blocker(Sartan)
 Nitric oxide , ,
 heart protection . ACE

2. JNC
 140 mmHg ,
 90 mmHg ,
 130/85 mmHg
 meta - analysis
 가
 가
 가
 가

3. 2002 가
 ACC/AHA guideline update
 (16). 가

cholesterol 200mg/dL, triglyceride 200 mg/dL, 30, statin, statin, LDL cholesterol 100 mg/dL, DCCT(Diabetes complication control trial) type I, LDL cholesterol 101 ~ 129 mg/dL, statin, LDL, HDL cholesterol, nicotinic acid, fibric acid, ATP, HDL cholesterol, lower limit 35 mg/dL, 40 mg/dL, HDL cholesterol, type 2, 80 ~ 120 mg/dL, 100 ~ 140 mg/dL, 7.0%, 150 mg/dL, (17).

4. National Cholesterol Education Program - Adult Treatment Panel (ATP -), 20,000, 5, Heart Protection Study(HPS)가 2002, simvastatin, 40 mg, placebo, 25%, (18).

pool, non - HDL cholesterol, (200 mg/dL), ATP - LDL, VLDL - cholesterol, non - HDL cholesterol, (total cholesterol, HDL cholesterol), non - HDL cholesterol, 130 mg/dL, (16).

1. Braunwald EB, ed. Heart disease : A textbook of cardiovascular medicine, 6th ed. Philadelphia : WB Saunders, 2001 : 1114 - 231
2. ACC/AHA Guidelines for the Management of Patients with Acute Myocardial Infarction, 1999 Updated Guideline Web version. www.acc.org/www.americanheart.org
3. White HD. Thrombolytic therapy and equivalence trials. *J Am Coll Cardiol* 1998 ; 31 : 494 - 6
4. Assessment of the Safety and Efficacy of a New Thrombolytic (ASSENT - 2) Investigators : Single - bolus tenecteplase compared with front - loaded alteplase in acute myocardial infarction : The ASSENT - 2 double - blind randomised trial : Assessment of the Safety and Efficacy of a New Thrombolytic Investigators. *Lancet* 1999 ; 354 : 716 - 22
5. Braunwald E, Antman EM, Beasley JW, Califf RM, Cheitlin MD, Smith SC Jr., et al. ACC/AHA guidelines for the management of patients with unstable angina and non - ST - segment elevation myocardial infarction : a report of the ACC/AHA Task Force on Practice Guidelines. *J Am Coll Cardiol* 2000 ; 36 : 970 - 1062
6. Braunwald E, Antman EM, Beasley JW, Califf RM, Cheitlin MD, Theroux P, et al. ACC/AHA guideline update for the management of patients with unstable angina and non - ST - segment elevation myocardial infarction - 2002 : a report of the ACC/AHA Task Force on Practice Guidelines. *J Am Coll Cardiol* 2002 ; 106 : 1893 - 900
7. Inhibition of the platelet glycoprotein α b/ γ a receptor with tirofiban in unstable angina and non - Q - wave myocardial infarction. Platelet Receptor Inhibition in Ischemic Syndrome Management in Patients Limited by Unstable Signs and Symptoms (PRISM - PLUS) Study Investigators. *N Engl J Med* 1988 ; 338 : 1488 - 97
8. Inhibition of platelet glycoprotein α b/ γ a receptor with eptifibatide in patients with acute coronary syndromes. The PURSUIT Trial Investigators. Platelet Glycoprotein α b/ γ a in Unstable Angina : Receptor Suppression Using Integrilin Therapy. *N Engl J Med* 1988 ; 339 : 436 - 43
9. ISIS - 2(Second International Study of Infarct Survival) Collaborative Group. Randomized trial of intravenous streptokinase, oral aspirin, both or neither among 17,817 cases of suspected acute myocardial infarction. *Lancet* 1988 ; 2 : 349
10. CAPRIE Steering Committee. A randomized, blinded, trial of clopidogrel vs. aspirin in patients at risk of ischemic events (CAPRIE). *Lancet* 1996 ; 348 : 1329 - 39
11. The CURE investigators. Effects of clopidogrel in addition to aspirin in patients with acute coronary syndromes without ST segment elevation. *N Engl J Med* 2001 ; 109 : 52 - 8
12. Eikelboom JW, Anand SS, Malmberg K, Weitz JI, Ginsberg JS, Yusuf S, et al. Unfractionated heparin and low - molecular - weight heparin in acute coronary syndrome without ST elevation : a meta - analysis. *Lancet* 2000 ; 355 : 1936 - 42
13. AHA/ACC/ACP - ASIM guidelines for the management of the patients with chronic stable angina : Executive Summary and Recommendations. *Circulation* 1999 ; 99 : 2829 - 48
14. Opie LH. First line drugs in chronic stable effort angina - the case for newer, longer - acting calcium channel blocking agents. *J Am Coll Cardiol* 2000 ; 36 : 1967 - 71
15. The Heart Outcomes Prevention Evaluation (HOPE) Study Investigators. Effects of an ACE inhibitor, ramipril, on cardiovascular events in high risk patients. *N Engl J Med* 2000 ; 342 : 145 - 53
16. Gibbons RJ, Abrams J, Chatterjee K, Daley J, Deedwania PC, Williams SV, et al. ACC/AHA 2002 guideline update for the management of patients with chronic stable angina : a report of the ACC/AHA Task Force on Practice Guidelines. *Circulation* 2003 ; 107 : 149 - 58
17. UK Prospective Diabetes Study Group. Intensive blood glucose control with sulfonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes. *Lancet* 1998 ; 352 : 837 - 53
18. Executive Summary of the third report of the National Cholesterol Education Program Expert Panel on detection, evaluation, and treatment of high blood cholesterol in adults(Adult Treatment Panel III). *JAMA* 2001 ; 285 : 2486 - 97