

고혈압의 약물 치료

이 방 현

Treatment of Hypertension : Drug Therapy

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가

고혈압 - 언제 치료 할 것인가?

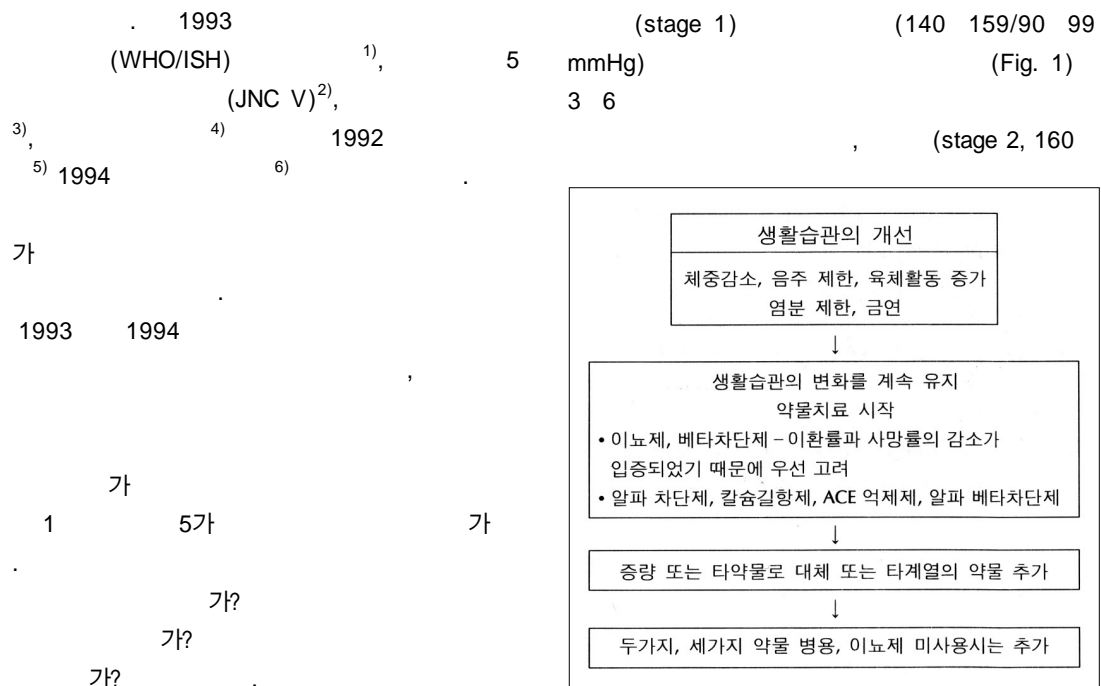


Fig. 1. 제 5 차 미국 합동위원회 보고에 의한 치료지침.

Table 1. 표적장기 손상에 의한 고혈압의 분류(WHO/ISH)			
Stage			
Stage			
Stage			

Table 2. 강압제 투여 개시의 혈압기준			
			(+)
JNC V(1993)	140*	90*	
	150*	95	90
WHO/ISH(1993)	160	95	140/90
(1993)	160	100	90
Canada(1993)	160	100	140/90
Australia(1994)	160	95	140/90
New Zealand (1992)	150	90	

179/100 109mmHg)

(Table 1)

MRC

(Medical Research Council) Trial⁷⁾

100mmHg

MRFIT(Multiple Risk Factor Intervention Trial)⁸⁾

100mmHg

SHEP(Systolic Hypertension in the Elderly Program)⁹⁾

JNC V

140/90mmHg (

)

140 149mmHg,

90 94mmHg

150/95mmHg

가 (Table 2).

WHO/ISH 160mmHg

95mmHg

100mmHg

가 90mmHg

160mmHg

(Table 2).

160mmHg , 95mmHg

140/90mmHg

Stage 3(>110mmHg)가

1 2

stage 4(>210 />120mmHg)

1985 EWPHE (European Working Party on Blood Pressure in the Elderly)¹⁰⁾가

SHEP⁹⁾, STOP - Hypertension(Swedish Trial in Old Patients with Hypertension)¹¹⁾, MRC⁷⁾

MRC

75

가

혈압 - 어디까지 내려야 하나?

140/90mmHg

Cruickshank¹²⁾ 90mmHg

JNC - V 140/90mmHg

가 130/85mmHg

8
130/
85mmHg
140 160mmHg
180mmHg
160mmHg 160 179mmHg 20m
mHg
WHO/ISH
120 130/80mmHg
140/90mmHg WHO/ISH JNC - V
85mmHg 가
HOT - Study(Hypertension Optimal Tre -
atment)
mmHg
J - curve 가
가
80mmHg
14,15) K⁺
(hydrochlorothiazide 25mg)
16,17,18)
nifedipine
가
19,20)

치료약제 - 어떻게 선택해야 하나?

1. 초기약제의 선택

가 가 ,
가
가
1 2
가
2. 2차약의 선택
1 가 가
가
, ACE
(angiotensin)
가
(Fig. 1).
WHO/ISH 가
가
ACE
ACE Ca
ACE , Ca

2가

가

3. 3차약의 선택

2가

가 2).

저항성 고혈압 - 어떻게 해야 하나?

thiazide ,

, ACE ,

3가

160mmHg, 90m

mHg

13 20%

Australian The -

19%

3가 가 ,

4%

100mmHg , 25%

90m

90mmHg

1.3%

90 99mmHg 5.0%

가

10 36%

15 25%

Table 3

2가

가

Table 3. 저항성 고혈압의 원인

Drug interactions

Non-compliance

Measurement artifact

Secondary hypertension

False tolerance

Table 4. 감압제의 효과를 감소시키는 약물

Non-specific interactions

Non-steroidal anti-inflammatory drugs(e.g. indomethacin, ibuprofen)

Sympathomimetic drugs in cold cures(e.g. phenylpropanolamine, pseudoephedrine)

Synthetic estrogens(in oral pills)

Corticosteroids

Carbenoxolone sodium

Sodium-containing preparations(e. g. sodium bicarbonate)

Cyclosporin

Erythropoietin

Anabolic steroids

Cocaine

Specific interactions

Amitriptyline and adrenergic blockers(e. g. guanethidine)

Amitriptyline and centrally acting drugs(e.g. methyl dopa, clonidine)

Table 4

가

가 . cuff methods

가 pseudohyperten -

sion(가)

가

가

가 .

가

adrenergic neuron blockers

가

가 , thiazide

false tolerance

Table 5. 저항성 고혈압의 치료

1. 가							ACE
2.	compliance						
3. 24	가						
4.							
5.	pheochromocytoma	가	(nondipper)	가		2	
6. False tolerance	가						
40mg	가						
7.	가						
8. Pseudohypertension	가						
가							
9.	(

가 non - dipper 24

(Table 5).

활동중 혈압측정과 강압제

nifedipine 가 ACE

가

타질환 동반시의 고혈압치료

50%

가가 가
() ,
isolated systolic hypertension,
가

24)

(Table 6)

(Table 7).

24

1. 관상동맥질환 환자에서의 고혈압의 치료

가

trough to peak ratio(T/P

)

가

. Sta -

nton 22)

Table 6. 강압제의 부작용

	Thiazide	dL)	K	(Cr. 1.5mg/
	Loop		K	Na
	K (Aldactone)	K (aldosterone)
-	1 2			
	1 (Tenomin)			
Ca	Nifedipine(Adalat)			
	Nicardipine(Perdipine)			
	Diltiazem(Herben)		()
ACE	Captopril	K (aldosterone)
	Enalapril(Renitec)			
1	Prazosin(Minipress) Terazosin			
	Hydralazine(Apresoline)			
	Clonidine(Catapress)			rebound
	-methyldopa(Aldomet)			, impotence,

Table 7. 개인별 약제 선택

	-	-	Ca	ACE
2	0	1	1	1
0	2	1	2	1
1	2	1	2	1
2	X	1	X	2
1	1	0	2	2
2	0	1	2	2
X	X	2	1	2
X	X	2	1	1
1	X	1	1	1

(2>1>0, x)

가 (Propra-
nolol, Metoprolol). K⁺ Mg⁺⁺

Table 8. 강압제와 혈중 지질

(1)	: Clonidine (Catapres)
(2)	α- : Prazosin (Minipress), Terazosin (Hytrin)
(3)	: Nifedipine (Procardia), Nicardipine (Perdipine), Verapamil (Isopstin), Diltiazem (Herben), Nitrendipine (Baypress)
(1)	: Thiazide, Furosemide (Lasix)
(2)	: Propranolol (Inderal), Atenolol (Tenormin), Metoprolol (Lopressor), Nadolol (Corgard)
(3)	Methyldopa (Aldomet)
(4)	Reserpine
(1)	Pindolol (Visken), Acebutolol (Sectral)
(2)	Hydralazine (apresoline)
(3)	Minoxidil (Loniten)
(4)	ACF : Captopril (Capoten), Enalapril (Renitec), Lisinopril (Privilil, Zestril)

angiotensin

1 가

Table 8

가

가

ISA가 (Pindolol, Acebutolol)

가 가

(1) 1 : Propranolol, Atenolol, Metoprolol, Clonidine
 (2) 2 : ACE , Prazosin, Terazosin
 (3) : Pindolol, Acebutolol, (Hydralazine)
 (1) 1 : , Clonidine, Prazosin
 (2) 2 : ACE , , Pindolol, Acebutolol
 (3) : Propranolol, Atenolol, , Methyldopa, Reserpine

2. 당뇨병 환자에서의 고혈압 치료

가 .
 K^+
 catecholamine cou -
 nterregulation
 , ,
 . ACE
 1
 2 re -
 nin 가 .
 60mmHg

가
 Table 9 .
 (1) 1 : ACE , , Clonidine, Terazosin, Prazosin
 (2) 2 : Acebutolol, Pindolol.
 (3) : Propranolol, Atenolol, , Methyldopa, Reserpine impotence가
 (1) 1 : ACE , , Prazosin
 (2) 2 : Clonidine,
 (3) : , , Methyldopa, Reserpine

3. 뇌혈관 질환시의 고혈압 치료

가 .
 .
 30 50%
 가 .
 (TIA)
 가 105mmHg
 60mmHg

Table 9. 강압제와 당대사

				HbA _{1c}
ACE	Non-selective	?	?	?
	Cardioselective			?
	with ISA	?	?	?
	with alpha	?	?	?
/				
/				
Sympatholytics				?
				?
+ -				
+ ACE				?
+ -				?

가 . ACE
ACE 가
가
creatinine 2.5mg/dl K
K
K

(1) 1 : ACE , , Clonidine
(2) 2 : , Prazosin,
(3) : , Methyldopa, Reserpine Minoxidil
가
가
GFR RBF

4. 만성 폐쇄성 폐질환 및 기관지 천식시의
고혈압 치료
COPD
가
- 1 -
Labetolol
Sympathomimetic agent
Phenylpropanola-
mine Ephedrine Guanethidine Reserpine
가
Methylxanthines, steroid ,
ACE COPD
COPD
(1) 1 : , Clonidine, Prazosin
(2) 2 : ACE , , tensin
Methyldopa (NYHA class)
(3) : , Reserpine, Guanethidine ACE

5. 신장질환시의 고혈압 치료
1
가
2
creatinine 1.3mg/dL(50%)
가
creatinine 2.5mg/dl creatinine
clearance가 25ml/ Thiazide
가 Furosemide loop

Class
hydralazine
down regulation meto-
prolol
(1) 1 : ACE , , Prazosin,
(Hydralazine), Nitrendipine
(2) 2 : Clonidine, Diltiazem, Nitrendipine

6. 울혈성 심부전증시의 고혈압 치료

(3) : , Verapamil, Reserpine

7. 좌심실비대를 동반한 고혈압의 치료
가 가
가

가

가

가

(1) 1 : ,

(2) 2 : Clonidine

(3) : , Reserpine

9. 말초 혈관 질환시의 고혈압 치료

()

Raynaud

. ACE

. , ACE ,

Methyldopa

Raynaud

Ray -

naud

가

Minoxidil Hydralazine

가 가

가

(1) 1 : ACE , , Pra -
zosin,

(2) 2 : (ISA가 Ace -
butolol, Pindolol), Clonidine

(1) 1 : ACE , , Methy -
ldopa, Clonidine, Prazosin

(2) 2 : ,

(3) : Minoxidil, Hydralazine

10. 만성 간질환시의 고혈압 치료

Methyldopa

8. 부정맥을 동반한 고혈압의 치료

K Mg

Thi -

azide Furosemide

. , ACE K

Clonidine, , .

(1) 1 : Clonidine, , Prazosin

(2) 2 : ACE , ,

(3) : Methyldopa,

11. 임신 중독증시의 고혈압

Thiazide,

(1) 1 : , Verapamil, Clonidine

(2) 2 : ACE , , Prazosin

(3) : Pindolol, Acebutolol,

Hydralazine
yldopa

Meth -

(1) 1 : Hydralazine

(2) 2 : ACE , , Methyldopa, Clonidine, Prazosin
(3) : , , Reserpine, Guanethidine

12. 통풍시의 고혈압 Thiazide

(1) 1 : ACE , , Clonidine, Methyldopa, Prazosin
(2) 2 :
(3) : ,

13. 정신질환 환자의 고혈압

, , nightmare , Reserpine, Methyldopa
Propranolol Metoprolol
가
(1) 1 : ACE , , , (Prazosin),
(2) 2 : Clonidine
(3) : Reserpine, Methyldopa,

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