

[연수강좌]

혈압조절이 안 되는 환자의 약물치료

박 영 규

제생병원

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Unmet Need in the Treatment of Hypertension

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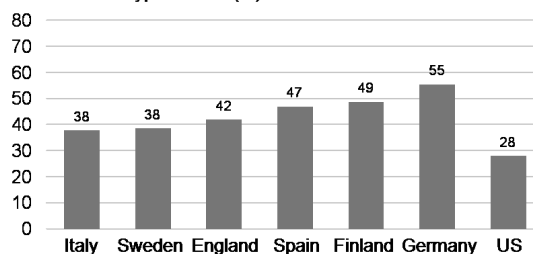
Unmet Need in the Treatment of Hypertension

Prevalence of hypertension

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Prevalence of Hypertension in US and European Adults Aged 35–64 Years

Prevalence of hypertension (%)

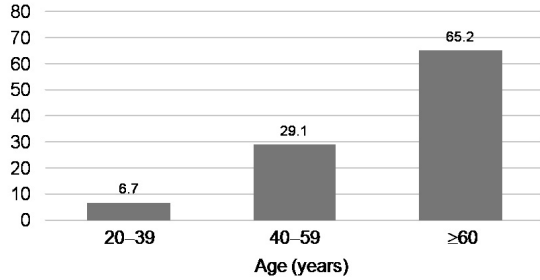


Age- and sex-adjusted
Hypertension defined as BP \geq 140/90 mmHg or on treatment

Wolf-Maier et al. JAMA 2003;289:2363-9

Prevalence of Hypertension Increases With Age

Prevalence of hypertension (%)

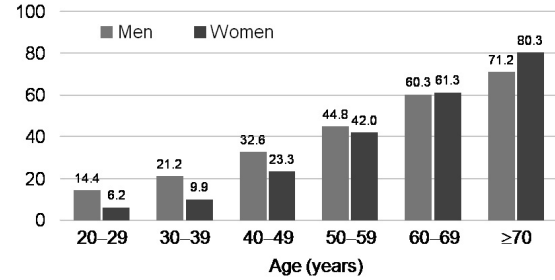


Estimated non-institutionalized US adults, 1999-2002
Adapted from Centers for Disease Control and Prevention

Brown. BMJ 2006;332:833-6

Prevalence of Hypertension by Age and Gender

Prevalence of hypertension (%)

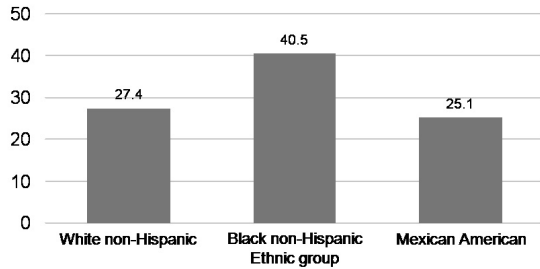


Data for established market economies (US, Canada, Spain, England, Germany, Greece, Italy, Sweden, Australia, Japan)

Keamey et al. Lancet 2005;365:217-23

Prevalence of Hypertension Changes with Ethnicity

Prevalence of hypertension (%)



Estimated non-institutionalized US adults, 1999-2002
Adapted from Centers for Disease Control and Prevention

Brown. BMJ 2006;332:833-6

Unmet Need in the Treatment of Hypertension

Treatment and control rates

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Classification of BP in US and European Adults: JNC VII and ESH-ESC Guidelines

JNC VII			ESH-ESC		
BP category	Systolic (mmHg)	Diastolic (mmHg)	BP category	Systolic (mmHg)	Diastolic (mmHg)
Normal	<120	& <80	Normal	120-129	& 80-84
Pre-hypertension	120-139	or 80-89	High normal	130-139	or 85-89
Hypertension Stage 1	140-159	or 90-99	Grade 1 (mild)	140-159	or 90-99
Hypertension Stage 2	≥160	or ≥100	Grade 2 (moderate)	160-179	or 100-109
			Grade 3 (severe)	≥180	or ≥110

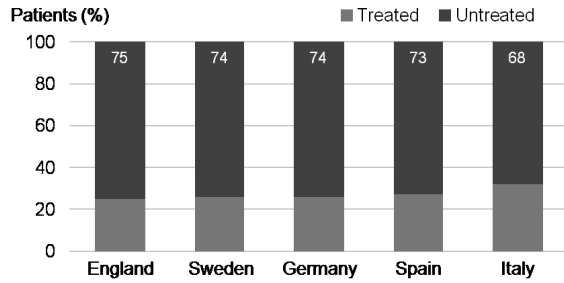
Chobanian et al. JAMA 2003;289:2560-72
Guidelines Committee. J Hypertens 2003;21:1011-53

JNC VII and ESH-ESC Summary: Target BP Goals

Type of hypertension	BP goal (mmHg)
Uncomplicated	<140/90
Complicated	
Diabetes mellitus	<130/80
Kidney disease	<130/80

Chobanian et al. JAMA 2003;289:2560-72
Guidelines Committee. J Hypertens 2003;21:1011-53

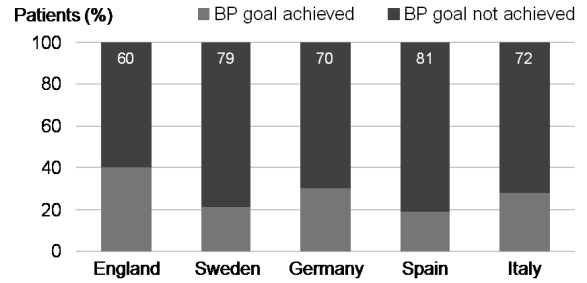
Proportion of Patients Treated/Not Treated for Hypertension in Europe*



*Age adjusted; patients aged 35–64 years
Hypertension = 140/90 mmHg threshold

Wolf-Maier et al. Hypertension 2004;43:10–17

Approximately 70% of Patients* in Europe Do Not Reach BP Goal



*Treated for hypertension
BP goal is <140/90 mmHg

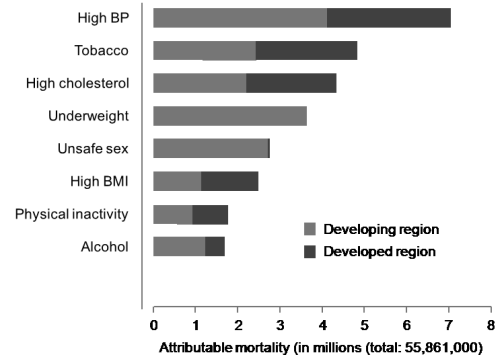
Wolf-Maier et al. Hypertension 2004;43:10–17

Unmet Need in the Treatment of Hypertension

Health and economic burden of uncontrolled BP

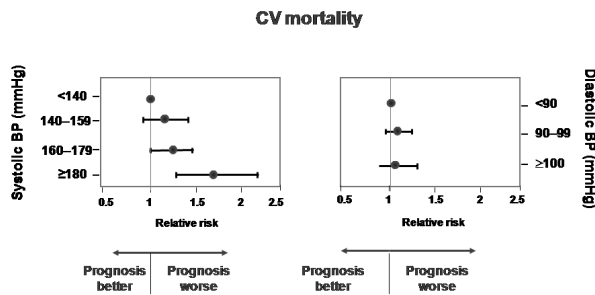
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Global Mortality 2000: Impact of Hypertension and Other Health Risk Factors



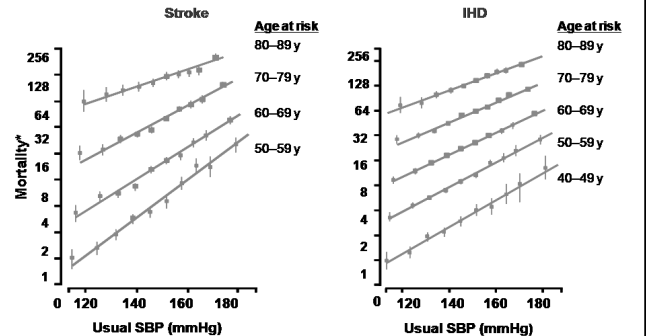
Adapted from Ezzati et al. Lancet 2002;360:1347–60

Predictive Power of Systolic Blood Pressure on Overall Cardiovascular Outcomes



Alli et al. Arch Intern Med 1999;159:1205–12

Stroke and Ischemic Heart Disease (IHD) Mortality Rate in Each Decade of Age, Versus Usual Systolic BP at the Start of that Decade

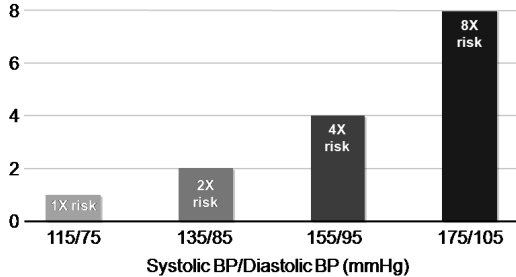


*Floating absolute risk and 95% CI

Lewington et al. Lancet 2002;360:1903–13

Cardiovascular Mortality Risk Doubles with Each 20/10 mmHg Increment in Systolic/Diastolic Blood Pressure*

CV mortality risk



*Individuals aged 40–69 years

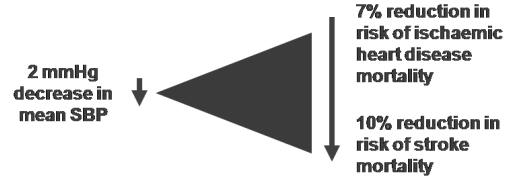
Lewington et al. Lancet 2002;360:1903–13

Blood Pressure Reduction of 2 mmHg Decreases the Risk of Cardiovascular Events by 7–10%

■ Meta-analysis of 61 prospective, observational studies

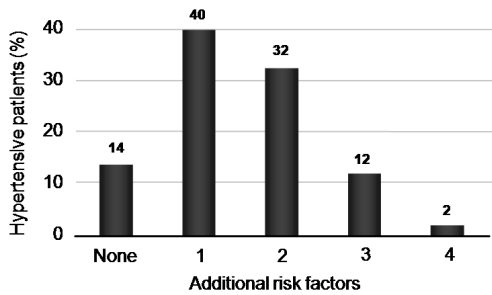
■ 1 million adults

■ 12.7 million person-years



Lewington et al. Lancet 2002;360:1903–13

More Than 80% of Patients with Hypertension Have Additional Risk Factors



Mancia et al. J Hypertens 2004;22:51–7

‘Controlling blood pressure with medication is unquestionably one of the most cost-effective methods of reducing premature CV morbidity and mortality’

Elliott. J Clin Hypertens 2003;5(Suppl. 2):3–13

Rationale for Multiple-mechanism Therapy in Hypertension

- Inadequacy of Agents with a Single Mechanism of Action
- Advantages of Multiple-mechanism Therapy
- Recommendations for Multiple Agent Therapy
- Benefits of Fixed-dose Combinations Versus Free Combinations

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Rationale for Multiple-mechanism Therapy in Hypertension

Inadequacy of agents with a single mechanism of action

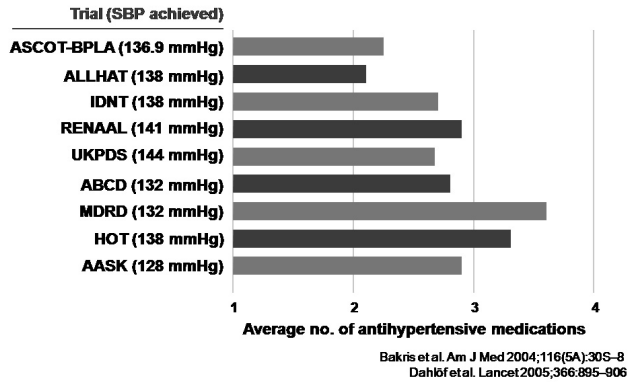
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Inadequacy of Agents with a Single Mechanism of Action (MoA)

- Materson et al. observed that antihypertensive agents with a single MoA were inadequate to achieve a diastolic BP <95 mmHg in 40–60% of hypertensive patients¹
- In patients with hypertension and diabetes, more than 65% will require two or more antihypertensive agents to achieve the recommended target BP of <130/80 mmHg²
- Because hypertension is a multifactorial disease, in most cases at least two antihypertensive agents are needed for patients to achieve BP goal³

¹Materson et al. N Engl J Med 1993;328:914–21
²Bakris et al. Am J Kidney Dis 2000;36:646–61
³Milani. Am J Manag Care 2005;11:S220–7

Multiple Antihypertensive Agents are Needed to Reach BP Goal

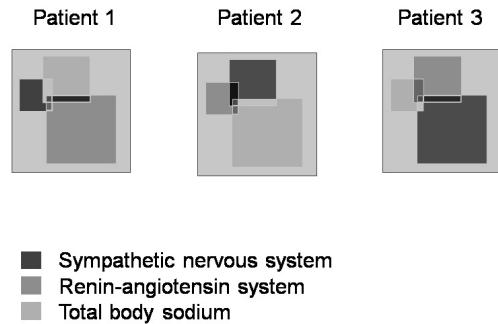


Rationale for Multiple-mechanism Therapy in Hypertension

Advantages of multiple-mechanism therapy

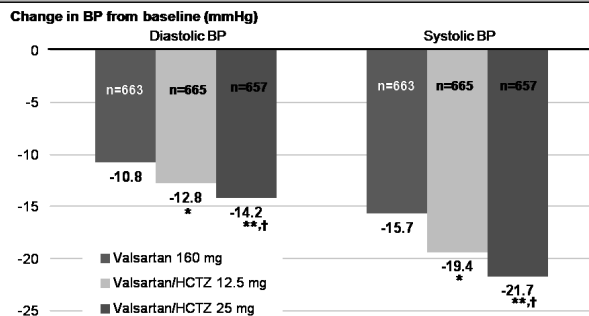
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Blood Pressure has Multiple Regulatory Pathways



B. Waeber, March 2007, with permission

Efficacy: Blood Pressure Reduction with Valsartan/HCTZ Compared with Valsartan Monotherapy in Mild-to-Moderate Hypertension[†]



[†]Patients with mild-to-moderate hypertension not adequately controlled by monotherapy
^{*}p<0.01 vs valsartan 160 mg; ^{**}p<0.01 vs valsartan/HCTZ 12.5 mg
[†]p<0.001 vs valsartan 160 mg
 Mallion et al. Blood Press 2003;12(Suppl 1):36–43

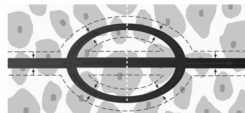
Advantages of Multiple-mechanism Therapy: Safety/Tolerability

Multiple-mechanism therapy may have an improved tolerability profile compared with its single-mechanism components^{1,2}

- Components of multiple-mechanism therapy can be given at lower dosages to achieve BP goal than those required as monotherapy → therefore better tolerated^{1,2}
- Compound-specific adverse events can be attenuated, e.g.,^{1,2}
 - RAS blockers may attenuate the edema that is caused by CCBs

¹Sica. Drugs 2002;62:443–62
²Quan et al. Am J Cardiovasc Drugs 2006;6:103–13

Complementary Effects of a CCB/RAS Inhibitor: Reduction of CCB-associated Edema



Arterial hypertension

- Constricted blood vessels, high resistance



CCBs

- BP reduction due to arterial vasodilation
- Tendency towards edema due to absent venodilation
- BP reduction stimulates RAS and increases angiotensin II level



CCBs + RAS inhibitors*

- Blockade of RAS inhibits effects of angiotensin II, giving rise to additional BP reduction
- Additional venodilation by RAS inhibitors reduces edema

*Angiotensin receptor blockers or angiotensin-converting enzyme inhibitors

Rationale for Multiple-mechanism Therapy in Hypertension

Recommendations for multiple agent therapy

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Recommendations for Multiple-mechanism Therapy: What the Treatment Guidelines Say

■ JNC VII¹

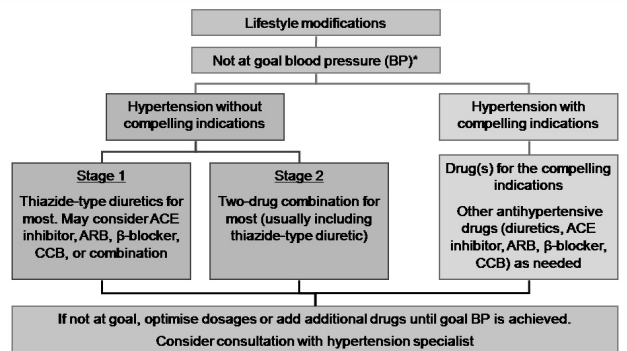
- "Most patients with hypertension will require two or more antihypertensive agents to achieve their BP goals"
- "When BP is more than 20 mmHg above systolic goal or 10 mmHg above diastolic goal, consideration should be given to *initiate therapy* with 2 drugs, either as separate prescriptions or in fixed-dose combinations"

■ ESH-ESC²

- "To reach target blood pressures, it is likely that a large proportion of patients will require therapy with more than one agent"

¹Chobanian et al. JAMA 2003;289:2560-72
²ESH-ESC Guidelines. J Hypertens 2003;21:1011-53

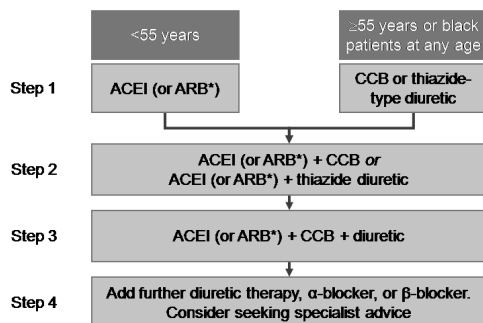
JNC VII: Algorithm for Treatment of Hypertension



*BP goal <140/90 mmHg or <130/80 mmHg for those with diabetes or chronic kidney disease

Chobanian et al. JAMA 2003;289:2560-72

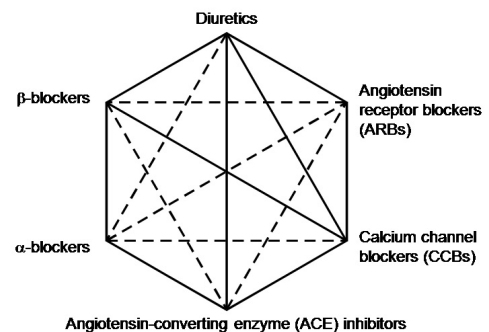
Updated UK NICE Guidelines for the Treatment of Newly Diagnosed Hypertension



*If ACE inhibitor (ACEI) not tolerated

<http://www.nice.org.uk/download.aspx?o=CG034fullguideline>. Accessed June 2006

ESH-ESC Recommendations for Combining BP-lowering Drugs



— Most rational combinations
- - Combinations used as necessary

ESH-ESC Guidelines. J Hypertens 2003;21:1011-53

Rationale for Multiple-mechanism Therapy in Hypertension

Benefits of fixed-dose combinations versus free combinations

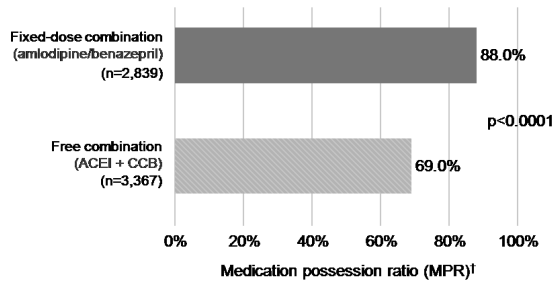
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Advantages of Fixed Versus Free Combinations of Two Antihypertensive Drugs

	Fixed	Free
Simplicity of treatment	+	—
Compliance	+	—
Efficacy	+	+
Tolerability	++	—
Price	+	—
Flexibility	—	+

*Lower doses generally used in fixed-dose combinations
+ = potential advantage

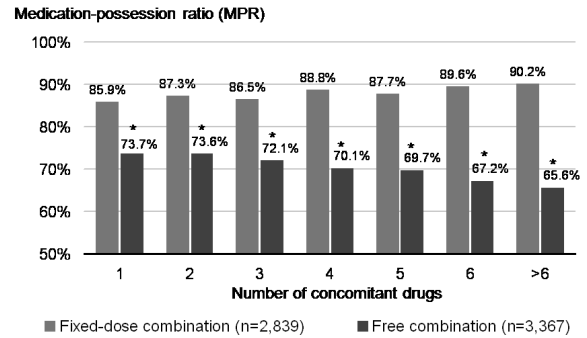
Improved Compliance with Fixed-dose Combination Therapy Compared with Free-combination Therapy



[†]Defined as the total number of days of therapy for medication dispensed/365 days of study follow-up

Wanovich et al. Am J Hypertens 2004;17:223A (poster)

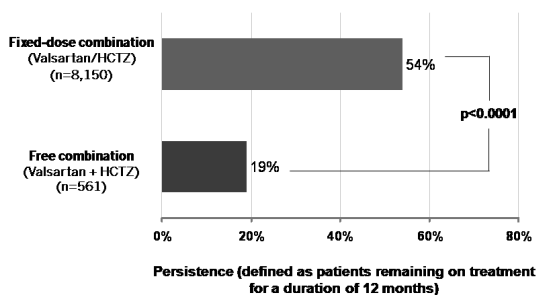
Fixed versus Free Combinations: Impact of an Increase in the Number of Concomitant Drugs



*p < 0.0001

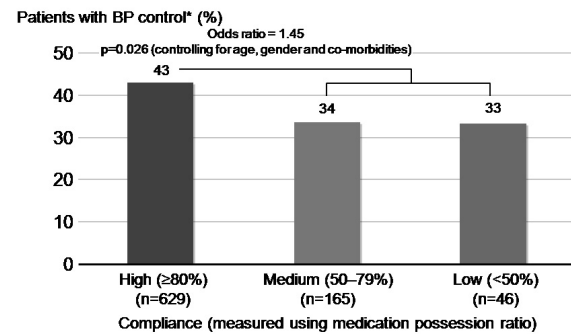
Wanovich et al. Am J Hypertens 2004;17:223A (poster)

Increased Persistence with Fixed-dose Combinations Compared with Individual Component-based Therapy



Jackson et al. Value Health Suppl 2006;9:A363

Highly Compliant Patients are More Likely to Attain BP Goal



* <140/90 mmHg or <130/85 mmHg for patients with diabetes

Bramley et al. J Manag Care Pharm 2006;12:239–45

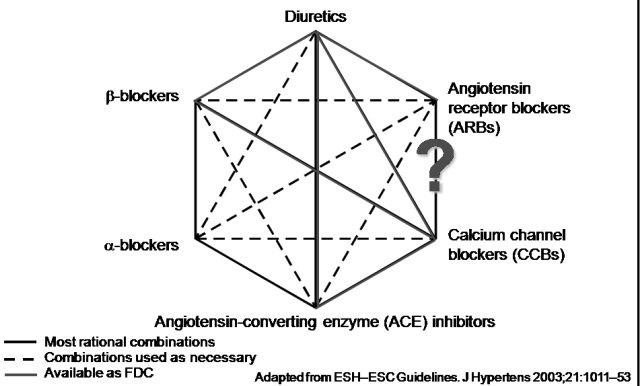
Compelling Compliance and Cost Advantages with Fixed-dose Combination Therapy

	Amlodipine/ benazepril FDC (n=2,754)	Any ACE inhibitor + CCB† (n=2,978)	p value
Medication possession ratio (compliance)	80.8%	73.8%	p<0.001
Total annual cost of CV- related care	\$726	\$1,600	p<0.001

†Agents given separately

Taylor et al. Congest Heart Fail 2003;9:324-32

ESH-ESC Recommendations for Combining BP-lowering Drugs and Availability as Fixed-dose Combinations



Tolerability and Risk Factor Modification: CCB-induced Peripheral Edema Minimized by the ARB

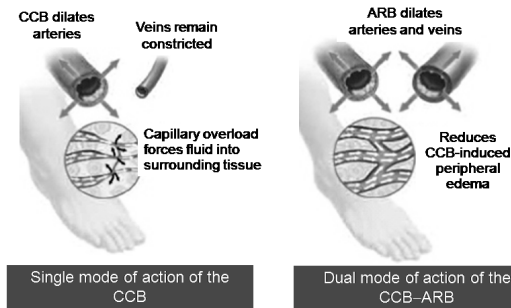


Illustration modified from www.kotnet.com

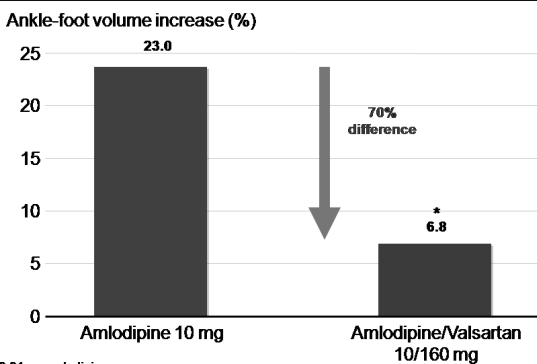
Opie. In: Opie LH, editor. Drugs for the Heart. 3rd ed. 1991:42-73
White et al. Clin Pharmacol Ther 1986;39:43-8; Gustafsson. J Cardiovasc Pharmacol
1987;10(Suppl. 1):S121-31; Messeri et al. Am J Cardiol 2000;86:1182-7

Clinical Evidence with Amlodipine/Valsartan

Amlodipine/Valsartan: safety and tolerability

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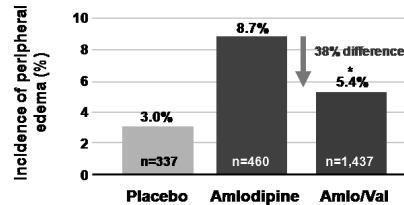
Reduced Fluid Retention with Amlodipine/Valsartan Compared with Amlodipine Monotherapy



*p<0.01 vs. amlodipine
N=80

Fogari et al. J Hum Hypertens 2007;21:220-4

Amlodipine/Valsartan: Effect on Amlodipine-induced Peripheral Edema



*p=0.0138 vs amlodipine

Pooled data from two trials at doses of
Amlodipine/Valsartan up to 10/320 mg and
amlodipine up to 10 mg

Philipp et al. Clin Ther 2007;29:online

The Five Most Frequently Reported AEs for Amlodipine/Valsartan Compared with Component Monotherapies and Placebo

Total popln (n)	Val/Aml 1,437	Val 921	Aml 460	Placebo 337	Total 3,155
Peripheral edema (%)	5.4*	2.1	8.7	3.0	4.6
Headache (%)	4.3	4.8	7.6	5.9	5.1
Nasopharyngitis (%)	4.3	4.0	3.5	1.8	3.8
Upper RTI (%)	2.9	1.4	2.4	2.1	2.3
Dizziness (%)	2.1	2.4	1.5	0.9	2.0

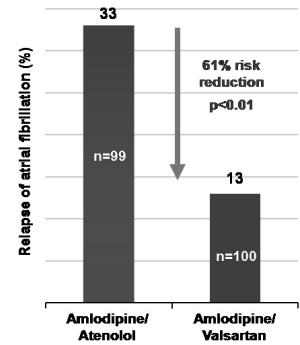
RTI = respiratory tract infection

*p=0.0138 vs amlodipine

Philipp et al. Clin Ther 2007;29:online

Recurrence of Atrial Fibrillation Reduced by Amlodipine/Valsartan

- N=220 controlled patients with type 2 diabetes (HbA_{1c} <7%)
- SBP >130 and <160 mmHg; DBP >80 and <100 mmHg
- Sinus rhythm at baseline, yet two ECGs with atrial fibrillation within last 6 months
- Comparable BP decline in both groups
- Amlodipine/Atenolol: 155/95 to 128/78 mmHg
- Amlodipine/Valsartan: 154/96 to 126/76 mmHg



Mugellini et al. J Hypertens 2006;24(Suppl. 4):S5

CASE 1

Insomnia로 내원한 90세 여자

C/C Insomnia onset : 1달전

P/I 상기 환자 known HTN, Asthma(50yr) 로 본원 FM F/U 중인 환자로 내원 1달전부터 불면 증상 보여 본원 PY약 (Stilnox 0.5T, Ativan 0.5T Since3/11 #14) 처방 받아 먹었으나 약을 먹어도 5~6시간 밖에 자지 못하고 잠을 자도 깨운하지 않은 느낌 들고 속 쓰리고 소화가 잘 안되는 것 같은 증상, 가끔씩 어지러운 증상 보여 본원 외래 경유 입원함.

Past History

: No DM/Hepatitis/Tuberculosis

HTN/asthma (+/+): 50여년전

-> 본원 FM에서 Aprovel 300 qd, cinalong 10 qd, onon 180 bid 복용 중

Op history (+) :Rt eye 백내장 수술 3년전,

Lt는 08년 1월 본원

Problem list

■ #1. insomnia

■ #2. GI discomfort

■ #3. HTN

■ #4. Asthma

Plan

#1. P> Stilnox 1T로 증량, xanax 0.25mg HS

#2. P> Lanston 15mg qdac, stillen 1t tid, ganaton 1t tid, medilac tid

#3. P> Exforge 5/160mg qd, cinalong 5mg qd로 change

#4. P> Onon bid 유지

[혈압조절이 안 되는 환자의 약물치료]

박성진 (20.09.19) 환자: 박성진 75세 남 : 06.4.16

K-MMSE & HDS-R

K-MMSE : 21점

HDS-R : 19점

Figure 1. K-MMSE & HDS-R

한국판 문헌리듬 인지평가 (MOCA-K)

MOCA-K : 19점

Figure 2. MOCA-K

■ HD #4

#1. Insomnia

#2. GI discomfort

#3. HTN

#4. Asthma

#5. HypoK

#1.

S) 잠을 여전히 5-6시간밖에 못 자겠어. 개운치 않아.

P) Stilnox 1T에서 Halcion 1T로 Change

#3.

O) BP 170/60 ~ 180/60

P) 기존약 Aprozol 300mg 1T QD, Cinalong 10mg 1T

→ 4/12부터 Exforge 5/160mg 1T QD, Cinalong 10mg 0.5T로

→ BP 계속 유지 안 되어 Cinalong을 1T로 증량, Dichlozid 12.5mg 추가함, 이후 BP 130/70 정도로 조절됨

#5.

O) K 3.4

P) K-contin 1T TID 추가

■ HD #6

#1. insomnia

#2. GI discomfort

#3. HTN

#4. Asthma

#5. HypoK → Resolved

#6. Anemia → Hb 10.8

#2.#6.

P) 속에 계속 뭐가 있거나 같은 증상에 대해 UGI 촬영 권유하였으나 집안 문제로 빨리 퇴원하길 원하여 Refuse하였으며 다음번에 증상 더 심해질 때 찍겠다고 함.

■ Treatment

: Exforge 5/160mg 1T QD

Cinalong 10mg 1T QD

Dichlozid 25mg 0.5T QD

Onon 180mg 1C BID

Lanston 15mg 1C QDAC

Stillen 60mg 1T TID

Ganaton 50mg 1T TID

Sylcon 500mg 1T TID

Medilac DS 1C TID

Stilnox 1T HS

Xanax 0.25mg 0.5T HS

Case 2

(김00 63/F)

<p>김00(63/F)</p> <p>■ C.C : 혈압 조절이 안 되서 왔어요 onset) 9yrs ago</p>	<p>P.I</p> <p>■ 본 62세 여환 9년전 HTN진단 받고 local에서 medication하였으나 잘 조절되지 않는 양상보여 병원 3-4군데 옮겨다니며 약제 변경하였으나</p> <p>매번 잘 조절되지 않는 양상 보이고 최근 두통</p> <p>땀뻣한 증상 있고 자주 불안하고 불면증등general weakness와 염려로</p> <p>further evaluation 및 proper manage위해</p> <p>금일 본원 OPD경유 입원</p> <p>(자가측정시 혈압 200/100까지 오르는 경우도있었다고 함.)</p>
<p>P.H</p> <p>■ DM-3년전 DM진단 받고 2년간 medication하다 1년전부터 식이요법으로 조절)</p> <p>HTN-Adalat oros 22mg 1T SPC</p> <p>Aprovel 150mg 2T SPC</p> <p>doxycyclin allergy</p> <p>Op history:c/s 2회</p> <p>6개월전 CIN(?)으로 conization</p> <p>메니에르병으로 치료받은 적있음</p>	<p>■ F.H</p> <ul style="list-style-type: none"> 아버지 : HTN,DM,CVA 어머니 : HTN <p>■ S.H</p> <ul style="list-style-type: none"> Smoking : no Alcohol : no
<p>Initial Problem list</p> <p>#1.uncontrolled High BP</p> <p>#2.headache</p> <p>#3.neckstiffnes</p> <p>#4.s/p conization d/t CIN</p> <p>#5.general weakness</p>	<p>Assessment & Plan</p> <p>■ #1.</p> <p>A> HTN</p> <p>P> if needed , HTN work up & control</p> <p>■ #2,3</p> <p>A> atherosclerotic change & narrowing in brain vessel d/t HTN & DM</p> <p>P> Brain imaging study</p> <p>■ #4.</p> <p>■ A> s/p conization d/t CIN</p> <p>P> PAP repeat, HPV test</p>

<p>H.D #1</p> <p>1. HTN</p> <p>O> BP 130/80</p> <p>A> HTN</p> <p>P>1. 자가약 복용</p> <p>Adalat oros 22mg 1T SPC</p> <p>Aprovel 150mg 2T SPC</p> <p>2. 경과 관찰</p>	<p>H.D #3</p> <p>■ 1. general weakness</p> <p>S>기운없어요</p> <p>O>1. Liver,GB,Pancreas USG</p> <p>-diffuse liver disease</p> <p>GB polyps</p> <p>2. BMD시행</p> <p>3. EGD시행-#1. Reflux esophagitis, LA-A</p> <p>#2. CSG</p> <p>P> Lanston 15mg Cap 2cap QDAC</p> <p>Lipitor 10mg Tab 1tab HS</p> <p>Maxmarvil Tab(PTP) 1tab QD</p>
<p>H.D #4</p> <p>■ 1. HTN</p> <p>O> BP 130/80</p> <p>A> HTN</p> <p>P>1. 혈압약 변경</p> <p>Adalat oros 22mg 1T SPC</p> <p>Aprovel 150mg 2T SPC</p> <p>→ Exforge 5/160mg 1tab QDAC</p> <p>변경후 130/80 정도 지속됨</p>	<p>H.D #8</p> <p>■ Neck & Thyroid USG</p> <p>- Two ovoid, well-circumscribed subtle hypoechoic nodule in both lobes of thyroid.</p> <p>- Indetermined nodule(1cm미만).</p> <p>■ Breast USG</p> <p>suspicious abnormality in the right breast,</p> <p>1 o'clock direction.</p> <p>BIRADS category IVa.</p>
<p>Treatment</p> <p>1. Exforge 5/160mg 1tab QD</p> <p>2. Lanston 30mg Cap 1cap QD</p> <p>3. Lipitor 10mg Tab 1tab QD</p> <p>4. Maxmarvil Tab(PTP) 1tab QDAC</p>	<p>Case 3</p> <p>(김00 49/M)</p>

<p>김00(49/M)</p> <p>■ C.C : Poor oral intake onset) 내원 일주일전</p>	<p>P.I</p> <p>■ 상기 49세 환자 6개월전 임플란트 시술 임시로 해 놓은 후 의치 낀 상태로 잘 지내던 중 1주전부터 의치가 잘 맞지 않아 끼지 못하였고 1주일전부터 죽과 과일만 먹으며 지내오던 중 watery diarrhea 하루 3~4회 지속하고 내원 3일전에는 vomiting 까지 있었음. 그 후 어제 다시 의치 교정한 후부터는 정상식이 하고 있고 약간 묽은 변으로 바뀌었지만 몸이 많이 탈진된 것 같고 1달새 체중이 5kg 빠지고 입맛이 없어 전반적 검사 위하여 외래 경유 입원함.</p>
<p>P.H</p> <p>■ NoDM/Hepatitis/Tuberculosis/Asthma</p> <p>■ HTN(+): 5년전 아주대 종합검진상 발견되었으나 6개월전부터 Local 내과에서 medication 시작하여 복용중.</p> <p>■ Op history : 25년전 치질 수술</p>	<p>■ F.H</p> <ul style="list-style-type: none"> • N/S <p>■ S.H</p> <ul style="list-style-type: none"> • Smoking :반갑/day * 30yr =15 pack year • Alcohol : social
<p>Initial Problem list</p> <p>■ #1. POI</p> <p>■ #2. Weight loss</p> <p>■ #3. Poor HTN control</p>	<p>■ Assessment</p> <ul style="list-style-type: none"> -HTN <p>■ Plan</p> <ul style="list-style-type: none"> -HTN medication 조정 -Hydration -건강검진

[혈압조절이 안 되는 환자의 약물치료]

H.D #1

■ 1. poor oral intake & general weakness

S> 1. 의치때문에 1주일전부터 죽과 과일만 먹었어요

2. Bwt loss: -5kg during 1 month

3. fever(-), recent ds Hx(-)

O> 1. mild dehydrated lip & tongue

2. abd pain / chest discomfort (-/-),

3. V/D (+/+), defecation habitual change(-)

4. lab> CBC 10100(seg 68%)-14.9/44.3-281K

CRP 7.87 Na/K/Cl 143/4.3/100

P> 1. further evaluation

2. hydration & supportive care

3. EGD & abd USG & Sigmoidoscopy 예정

H.D #1

2. HTN

O> BP 140/80

A> HTN

P> 1. 자가약 복용

-스카드정 50mg(amlodipine maleate 6.4mg)

1T QD

-carvedilol(dilatrend) 25mg 1T QD

-olmetec 20mg(ARB) 1T QD

2. 경과 관찰

H.D #2

■ 1. poor oral intake & general weakness

S> 밥맛이 없어요

O> 1. Bwt : 70.85 kg (BMI 25.4)

2. abd sono : moderate fatty liver

R/O Mild hepatomegaly

P> hydration & supportive care 지속

H.D #2

2. HTN

O> BP 140/90

A> HTN

P> 1. 자가약 복용

-스카드정 50mg(amlodipine maleate 6.4mg)

1T QD

-carvedilol(dilatrend) 25mg 1T QD

-olmetec 20mg(ARB) 1T QD

2. 경과 관찰

H.D #5

■ 1. poor oral intake & general weakness

S> 1. 입원당시와 비교하여 경구섭취 늘음

O> 1. Bwt 71.4kg (내원일 Bwt: 70.85kg),

입원당시 Bwt loss : -6kg (during 한달)

EGD

: #1. Metaplastic gastritis

#2. Erosive gastritis

Sigmoidoscopy

: #1. Colon polyp, Y-II

-> sigmoido endoscopic biopsy(sigmoid colon)시

P> 1. hydration & supportive care

H.D #5

2. HTN

O> BP 146/83

A> HTN

P> -스카드정 50mg(amlodipine maleate 6.4mg)

1T QD D/C

-carvedilol(dilatrend) 25mg 1T QD D/C

-olmetec 20mg(ARB) 1T QD D/C

-> Exforge 5/160mg 1T QD 로 변경

변경후 BP:130/80 으로 조절됨

[혈압조절이 안 되는 환자의 약물치료]

Treatment

1. 스카드정 50mg(amlodipine maleate 6.4mg) 1T QD

2. carvedilol(dilatrend) 25mg 1T QD

3. olmetec 20mg(ARB) 1T QD

->exforge 5/160mg 1T QD 로 변경후

외래에서 지속치료중