สมาคมความดันโลหิตสูงแห่งประเทศไทย
ประชุมวิชาการประจำปี 2559
ครั้งที่ 14

"Blood Pressure Control : From Normal to Optimal"

วันศุกร์ที่ 19 กุมภาพันธ์ 2559
ณ ห้อง Arnoma 2-3 ชั้น 3
โรงแรม อโนมา ถ.ราชดำริ กรุงเทพฯ

สมาคมความดันโลหิตสูงแห่งประเทศไทย
กำหนดการประชุมวิชาการประจำปี 2559 ครั้งที่ 14

"Blood Pressure Control : From Normal to Optimal"		
08.00 - 08.25 น.	ลงทะเบียน	
08.25 - 08.30 น.	เปิดการประชุม	ศ.นพ.พีระ บูรณะกิจเจริญ
08.30 –09.30 น.		ศ.นพ.พีระ บูรณะกิจเจริญ (**Moderator**)
08.30 - 08.50 น.	Cardiovascular Risk Predictors : SBP, DBP or Pulse Pressure?	ศ.นพ.อภิชาต สุคนธสรรพ์
08.50 – 09.10 น.	Blood Pressure Targets : Review of Evidences before SPRINT	รศ.นพ.ถาวร สุทธิไชยากุล
09.10 – 09.30 น.	SPRINT trial and its future impact	ศ.นพ.พีระ บูรณะกิจเจริญ
09.30 – 10.30 น.	**Coffee break พร้อมประชุมธุรการ**	
10.30 – 11.00 น.	**Free paper presentation**	รศ.นพ.ถาวร สุทธิไชยากุล (**Chair Person**)
11.00 - 11.40 น.	**Luncheon symposium (By Takeda)** **Up-to Date in Hypertension** • Treatment and Pitfall in Hypertension • Roles of L/T type CCB: Prevention and Delay Target Organ Damage	รศ.นพ.ถาวร สุทธิไชยากุล (**Speaker & Moderator**) ผศ.พญ.สว่างจิต สุรอมรกุล
11.40 – 12.40 น.	**Lunch**	
12.40 – 13.20 น.	**Luncheon symposium (By AstraZeneca)** SGLT2 inhibitor: Glycemic Control and Extra-Glycemic Effect for T2D treatment	ศ.นพ.พีระ บูรณะกิจเจริญ(**Moderator**) ผศ.นพ.พงศ์อมร บุนนาค
13.20 – 14.20 น.		ศ.พญ.วรรณี นิธิยานันท์ (**Moderator**)
13.20 – 13.40 น.	From ACCORD to SPRINT : The BP Target for Diabetic Patients	ผศ.นพ.พงศ์อมร บุนนาค
13.40 – 14.00 น.	Optimizing The Adverse Events from Antihypertensive Drugs	ศ.พญ.ทรงขวัญ ศิลารักษ์
14.00 – 14.20 น.	Antihypertensive Effects from Non-antihypertensive Medications	รศ.พญ.วีรนุช รอบสันติสุข
14.20 – 15.00 น.	Should We Go Optimal?	ศ.นพ.อภิชาต สุคนธสรรพ์ (**Moderator**) อ.นพ.ธนวัฒน์ เบญจานุวัตรา (**Pro**) ผศ.นพ.สุรพันธ์ สิทธิสุข (**Con**)
15.00 น.	ปิดการประชุม	ศ.นพ.พีระ บูรณะกิจเจริญ
	Coffee break หลังปิดประชุม	

Cardiovascular Risk Predictors : SBP, DBP or Pulse Pressure ?

A. Sukonthasarn M.D.
Chiang Mai University
Bangkok Hospital Chiang Mai

High blood pressure was the leading risk factor for the overall global burden of disease in 2010[1]. An up-to-date understanding of the associations of blood pressure with different non-fatal and fatal cardiovascular disease outcomes would help to refine strategies for primary prevention and inform the design of future clinical trials.

The study from Prospective Studies Collaboration in the year 2002[2] showed that usual blood pressure is strongly and directly related to vascular and overall mortality, without any evidence of a threshold down to at least 115/75 mmHg. For predicting vascular mortality from a single blood pressure measurement, the average of SBP and DBP is slightly more informative than either alone, and pulse pressure is much less informative[2].

In another study[3], associations with high systolic blood pressure were strongest for intracerebral hemorrhage, subarachnoid hemorrhage, and stable angina, and weakest for abdominal aortic aneurysm. Compared with diastolic blood pressure, raised systolic blood pressure had a greater effect on angina, myocardial infarction, and peripheral arterial disease, whereas raised diastolic blood pressure had a greater effect on abdominal aortic aneurysm. Pulse pressure associations were inverse for abdominal aortic aneurysm and strongest for peripheral arterial disease.

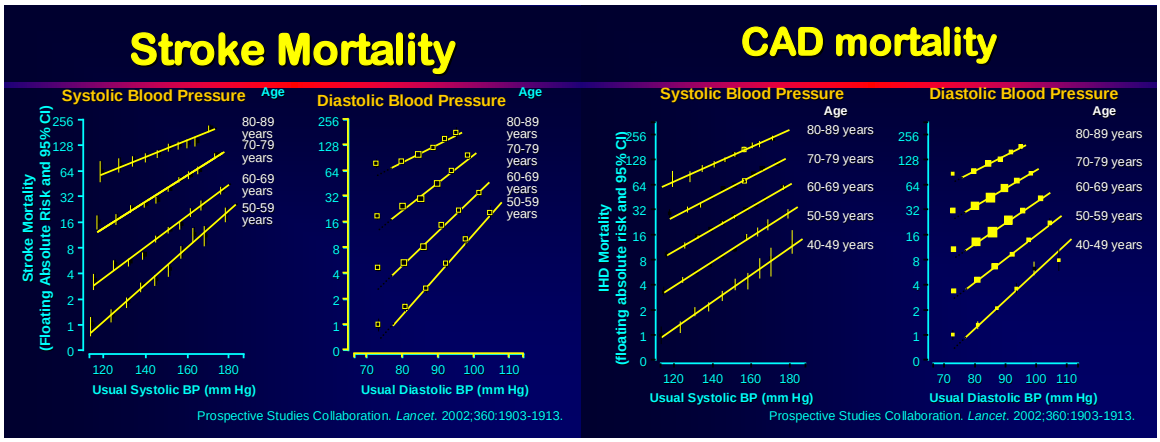
Reference

1. Lancet 2012;380:2224-60.
2. Lancet 2002;360:1903-13.
3. Lancet 2014;383:1899-911.

Blood Pressure Targets : Review of Evidences before SPRINT

รศ.นพ.ถาวร สุทธิไชยากุล
จุฬาลงกรณ์มหาวิทยาลัย

เป็นที่ทราบกันดีว่าเมื่ออายุมากขึ้นระดับความดันโลหิตซิสโตลิค (systolic blood pressure) จะเพิ่มขึ้นด้วย ซึ่งในอดีตกำหนดว่าความดันโลหิตซิสโตลิคเท่ากับ 100 หรือ 110 บวกกับอายุ เช่นอายุ 80 ปี ความดันโลหิตซิสโตลิคเท่ากับ 180 มิลลิเมตรปรอท ถือว่าปกติ การวิเคราะห์การศึกษาในระยะต่อมาพบว่า ความดันโลหิตที่สูงขึ้นทั้ง ซิสโตลิค และ ไดแอสโตลิค มีผลต่อการเสียชีวิตจากโรคหัวใจและหลอดเลือดทั้งโรคหลอดเลือดหัวใจและหลอดเลือดสมอง ดังนั้นในระยะจึงกำหนดระดับความดันโลหิตที่ถือว่าปกติ หรือสูง ดังตารางที่ 1 และการศึกษาตลอดมาล้วนแสดงให้เห็นว่าการรักษาความดันโลหิตลงสามารถภาวะแทรกซ้อนของโรคความดันโลหิตสูงเช่น ภาวะหัวใจล้มเหลว กล้ามเนื้อหัวใจขาดเลือดและกล้ามเนื้อหัวใจตาย อัมพฤก หรืออัมพาต รวมทั้งการเสียชีวิตจากโรคหัวใจละหลอดเลือด



การศึกษาที่ผ่านมาในผู้ป่วยที่มีภาวะความดันโลหิตสูงที่ไม่มีภาวะแทรกซ้อน ควรลดความดันโลหิตลงมาที่ระดับ 140/90 มิลลิเมตรปรอทหรือน้อยกว่า และในผู้ป่วยโรคไต หรือเบาหวาน ควรลดความดันโลหิตลงมาที่ระดับ 130/80 มิลลิเมตรปรอทหรือน้อยกว่า ทั้งนี้โดยไม่ได้กำหนดอายุ ดังตารางที่ 2

Hypertension guidelines
Target BP

Guidelines	Target BP
BHS IV 2004[1]	≤140/85mmHg
	≤130/80mmHg in patients with diabetes
ESC/ESH 2003[2]	≤140/90mmHg
ESC/ESH 2007	≤130/80mmHg in patients with diabetes
	≤130/80mmHg in DM, stroke, MI, Renal dysfunction, Proteinuria
JNC VII 2003[3]	≤140/90mmHg
	≤130/80mmHg in patients with diabetes or renal disease
WHO/ISH 1999[4]	≤140/90mmHg
	≤130/85mmHg in patients with diabetes

1. Williams B, et al. J Human Hypertens 2004;18:139–85.
2. ESC/ESH. J Hypertens 2003;21:1011–53.
3. Chobanian AV, et al. JAMA 2003;289:2560–72.
4. WHO/ISH. J Hypertens 1999;17:151–83.

แต่การศึกษาในระยะต่อมากลับพบว่า ความดันโลหิตที่ต่ำเกินไปจะเป็นอันตราย ซึ่งเรียกว่า J curve effect ซึ่งนอกจากการใช้ยาเพิ่มขึ้น สิ้นเปลืองงบประมาณในการรักษาแล้ว ผู้ป่วยยังมีอาการจากความดันโลหิตต่ำ หรือผลข้างเคียงจากยา ดังนั้นแนวทางในเวชปฏิบัติที่เสนอจากประเทศสหรัฐอเมริกาและประเทศทางยุโรป ได้นำเสนอระดับความดันโลหิตสูงขึ้น ในผู้ป่วยที่มีอายุมาก ดังภาพด้านล่าง

Target BP

Blood pressure goals in hypertensive patients

Recommendations	Class [a]	Level [b]	Ref. [c]
A SBP goal <140 mmHg:			
a) is recommended in patients at low–moderate CV risk;	I	B	266, 269, 270
b) is recommended in patients with diabetes;	I	A	270, 275, 276
c) should be considered in patients with previous stroke or TIA;	IIa	B	296, 297
d) should be considered in patients with CHD;	IIa	B	141, 265
e) should be considered in patients with diabetic or non-diabetic CKD.	IIa	B	312, 313
In elderly hypertensives less than 80 years old with SBP ≥160 mmHg there is solid evidence to recommend reducing SBP to between 150 and 140 mmHg.	I	A	265
In fit elderly patients less than 80 years old SBP values <140 mmHg may be considered, whereas in the fragile elderly population SBP goals should be adapted to individual tolerability.	IIb	C	-
In individuals older than 80 years and with initial SBP ≥160 mmHg, it is recommended to reduce SBP to between 150 and 140 mmHg provided they are in good physical and mental conditions.	I	B	287
A DBP target of <90 mmHg is always recommended, except in patients with diabetes, in whom values <85 mmHg are recommended. It should nevertheless be considered that DBP values between 80 and 85 mmHg are safe and well tolerated.	I	A	269, 290, 293

CHD = coronary heart disease; CKD = chronic kidney disease; CV = cardiovascular; DBP = diastolic blood pressure; SBP = systolic blood pressure; TIA = transient ischaemic attack.
[a]Class of recommendation.
[b]Level of evidence.
[c]Reference(s) supporting levels of evidence.

Recommendations (1/3)

✓ ***Recommendation*** *1*
(Strong recommendation)

	BP thresholds	Goals
General population **≥60 years**	SBP **≥150 mm Hg** or DBP **≥90 mm Hg**	SBP **<150 mm Hg** and DBP **<90 mm Hg**

- **Strong Recommendation**

No additional benefit compare with SBP 140-160 mmHg or 140-149 mmHg

JAMA. doi:10.1001/jama.2013.284427. Published online December 18, 2013.

แต่ทั้งนี้ยังแนะนำว่าถ้าสามารถลดความดันโลหิตลงให้ต่ำกว่าที่แนะนำโดยไม่มีอาการเนื่องจากความดันโลหิตต่ำ สามารถลดระดับความดันโลหิตลงโดยใช้ระดับ 140/90 มิลลิเมตรปรอทหรือต่ำกว่าได้

โดยสรุป จากการศึกษาในอดีตการลดระดับความดันโลหิตลงในผู้ป่วยความดันโลหิตสูงได้ประโยชน์ แต่การลดความดันโลหิตมากเกินไปจะเป็นอันตรายทั้งจากผลข้างเคียงของยาและจากความดันโลหิตที่ต่ำและเลือดไปหล่อเลี้ยงอวัยวะต่างๆลดลง โดยเฉพาะอย่างยิ่งอาการที่เกิดจากสมองขาดเลือดหล่อเลี้ยง รายละเอียดของการศึกษาที่เกี่ยวข้องจะนำเสนอในการบรรยายต่อไป

SPRINT Trial and Its Future Impact

Prof. Dr. Peera Buranakitjaroen
Division of Hypertension,
Department of Medicine
Siriraj Hospital

According to Hypertension Optimal Treatment (HOT) study[1], the recommended target BP among hypertensive patients was 138.5/82.6 mmHg and DBP <80 mmHg in diabetic group. However, International Verapamil SR/Trandolapril (INVEST) study[2] showed J-curve phenomenon in diabetic subgroup. Recently, Action to Control Cardiovascular risk in Diabetes (ACCORD) study[3] revealed that hypertensive diabetic patients in the intensive BP control group (SBP <120 mmHg) and the usual BP control group (SBP <140 mmHg) showed no statistical differences in the annual rate of the primary outcome. Therefore, 2013 ESH/ESC guidelines and JNC 8 guidelines recommended target BP in diabetic patients to be <140/90 mmHg.

Recently, the Systolic Blood Pressure Intervention (SPRINT) trial[4] carried out on non-diabetic hypertensive patients reported opposite results on target blood pressure. This study enrolled 9,361 non-diabetic patients, aged ≥50 years, who had a SBP 130-180 mmHg and an increased cardiovascular risk to a SBP <120 mmHg (intensive treatment) or <140 mmHg (standard treatment). It turned out that the intensive treatment group had a significant lower rate (1.65% per year) of the primary composite outcome than the usual treatment group (2.19% per year) (HR 0.75, 95% CI 0.64, 0.89, p<0.001) of those after a median follow-up of 3.26 years. The primary composite outcome consisted of myocardial infarction, acute coronary syndromes, stroke, heart failure or death from cardiovascular causes. Notably, the results of the primary outcome was dominated by heart failure and CVD death, while other individual outcomes did not show any statistical differences. All-cause mortality was also significant lower in the intensive treatment group (HR 0.73, 95% CI 0.60, 0.90, p=0.003).

Those patients with CKD at baseline did not show any benefit of intensive BP control, while those patients without CKD at baseline had a significant higher incidence of ≥30% decline in eGFR in those patients received intensive treatment (HR 3.48, 95% CI 2.44, 5.10, p<0.001) compared to usual BP control group. Moreover, rates of serious adverse events i.e. hypotension, syncope, electrolyte abnormalities and acute kidney injury or failure were higher in the intensive treatment group.

In conclusion, this study should not be applied widely in clinical practice since those patients with diabetes mellitus and previous stroke were excluded. They are at particular high risk to have J-curve phenomenon from hidden arterial disease. In addition, this study included a majority of cases with well controlled BP, well preserved renal function and good lipid control and very few current smokers.

References

1. Hansson L, Zanchetti A, Carruthers G, Dahlöf B, et al. Lancet 1998; 351:1755-62.
2. Denardo SJ, Gong Y, Nichols WW, Messerli FH, et al. Am J Med 2010; 123:719-26.
3. The ACCORD Study Group. N Engl J Med 2010; 362:1575-85.
4. The SPRINT Research Group. N Engl J Med 2015; 373:2103-16.

The Prevalence and the Incidence of Hypertension at Amphur Lumsonthi. (First part of Hypertension Registry at Amphur Lumsonthi Project)*

Wilai Puavilai,MD[1]; Santi Lapbenjakul,MD[2]; Kasem Phiadsoongnern[3]; Saowalak Hunnangkul[4]; Gumrai Phiadsoongnern[5]; Katesooda Gasornsookone, RN[6] ; Oratai Hoondee, RN[7] ; Prataueng Srilert,RN[7] and Boonyaporn Premprasert, RN[7**]

*Granted by Thai Hypertension Society; 1:Cardiologist, Rajavithi Hospital; 2:Director, Lumsonthi Hospital; 3: Chief, health-care personnel, Amphur Lumsonthi(AL); 4:Statistician, Faculty of Medicine, Siriraj Hospital, Mahidol Univ.,5:health-care personnel, AL; 6:register nurse, Lumsonthi Hospital; 7: register nurse, Rajavithi Hospital; ** passed away.

Background: Hypertensive patients (HT pt) are usually asymptomatic for a period of time, so they would be diagnosed to have hypertension (HT) when having such as stroke, congestive heart failure (CHF), pre- operative clearance and voluntary routine yearly check up. It is better to find out the HT pts in the community, manage them and control their blood pressure (BP) in goal to prevent serious complications.

Objectives: 1 to detect persons in Amphur Lumsonthi who have HT and register them

2 to determine the prevalence and incidence of HT at Amphur Lumsonthi.

Methods: Yearly screening BP measurement at home in persons who were 15 years old or higher in Amphur Lumsonthi by local health-care volunteers (LHCV), using digital automatic BP (DA) machine, following 2003 JNC7 Guidelines; persons who had BP 140/90 mm.Hg or more (asymptomatic) would be labeled as suspected high BP person (SHBP) and got the appointment to come to the local health-care hospital (LHCH) for confirmation of high BP by HT team (a cardiologist, experience nurses, LHCV). At the hospital, LHCV would re-measure BP of SHBP by using DA machines measuring of both arms simultaneously, following JNC 7 Guidelines and under experience nurse supervisor and consultant cardiologist. If the second BP value was lower than the first BP value significantly (10 mmHg or more) of the same arm, re-measuring of BP of that arm. A lot of SHBPs had to be measured BP for several times until systolic/diastolic value difference within 10/5 mmHg from the last value. Many SHBPs had to use Baumanometer mac hine measuring by experience nurse/ cardiologist.

If average BP was 140/90 or more in systolic or diastolic BP or both, hypertension was diagnosed and history taken, short physical examination and HT management given. In patients who have symptom(s) and /or severe hypertension, stat antihypertensive medication given mainly amlodipine with close observation, if the clinical outcome was not satisfied the HT pt would be transferred to Lumsonthi Hospital.

Result: There were 297,93 and 73 new diagnosed HT pt in the year 2012, 2013 and 2014 respectively screening from the age of 15 years old or higher; total of all new cases were 463 cases, male =245 , female =218 giving M:F =1.12:1. There were 29 (9.8%), 4(4.3%) and 4 (5.5%) cases in the year 2012, 2013 and 2014 respectively; totally of 37 cases with having BP>180/110 and 6 of them sent to ER Lumsonthi Hospital because of uncontrolled HT. There

were 794, 3 and 0 old cases in the year of 2012, 2013 and 2014 respectively; total of 797 old cases; grand total of new and old cases were 1,260cases.The prevalence of HT in the age of 15 years or higher for year 2014 = 5.91 %. The incidence of HT in the age of 15 years or higher =436.39 and 342.54 per 100,000 person-years in the year of 2013 and 2014 respectively.

Conclusion: The LHCV did initial Home BP screening yearly and made the appointment for SHBPs to meet HT team for final diagnosis and management. New HTpts were found in year 2012 more than 3 times comparing to year 2013 and 2014 and there were 37 severe hypertensive cases detected and got prompt treatment preventing serious complications. The prevalence of HT in the age of 15 years or higher = 5.91 %, and the incidence was 436.39 and 342.54 per 100,000 person-years in year 2013 and 2014 respectively.

From ACCORD to SPRINT : The BP target for diabetic patients

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Ramathibodi Hospital

Mahidol University

The ACCORD and SPRINT trials are both NHLBI-funded large RCTs that compare the effects of blood-pressure lowering treatment with a target of less than 120 mm Hg to that of less than 140 mm Hg in high risk populations. The ACCORD trial was done exclusively in patients with type 2 diabetes, while SPRINT trial excluded patients with diabetes. prior stroke, and polycystic kidney disease. What seems to be most intriguing is that the results of these two landmark trials are quite discordant.

The ACCORD showed a non-significant 12% relative reduction in its primary endpoint of nonfatal myocardial infarction (MI), nonfatal stroke, and death from cardiovascular causes (P=0.20), whereas SPRINT showed a significant 25% relative reduction in MI, other acute coronary syndromes, stroke, heart failure, or death from cardiovascular causes (P<0.001) There were also discrepancies in secondary endpoints of these 2 trials. SPRINT showed benefits of lowering blood pressure target for all-cause and cardiovascular mortality and heart failure but no significant benefit on stroke, while ACCORD found significant benefit only on stroke outcomes. To date, there are no clear explanations for these discrepancies. One of the most cited explanations was that the ACCORD was underpowered and the results would have been in accordance if the sample size of ACCORD had been larger. Not only was the sample size of ACCORD only half that of SPRINT (4,733 vs 9,361), but the event rates in ACCORD were also much less than what had been predicted. Further look at ACCORD results found that the 95% confidence interval for the primary outcome in ACCORD included the possibility of a 27% reduction, which is consistent with the 25% cardiovascular disease benefit observed in SPRINT. However, one cannot

exclude the possibility that lowering blood pressure target to less than 120 mmHg may not provide the same benefit in patients with diabetes as it does in SPRINT. The only way to solve this controversy is to conduct another larger hypertensive trials in diabetes, which is very unlikely to be funded. However, the large body of evidence from previous clinical trials demonstrated that the benefit of blood pressure reduction is similar among those with or without diabetes, it may therefore be prudent to lower BP goal in diabetes to somewhat less than 140 mmHg although the definitive target cannot be conclusively stated.

Optimizing the Adverse Events from Antihypertensive Drugs

Songkwan Silaruks, M.D.

Faculty of Medicine, khan Kaen University

Adverse events associated with any medication can compromise its therapeutic usefulness. There has been documented that anti-hypertensive drugs may be able to induce the development of adverse drug events (ADEs) in about 3% of the treated patients, particularly more frequent in women. The frequency of ADEs in monotherapy antihypertensive trials varies across drug classes and should be considered when choosing drugs for patients with essential hypertension. Because more than 75% of all ADEs are dose related, starting with the lowest effective doses that minimize ADEs is recommended. The most vulnerable age group involved in ADRs was that of the elderly patients. There has been reported that both the age of patients and the number of drugs played a role in the development of ADRs or drug-drug interactions (DDIs), with an impairment of the quality of life and an increase in healthcare costs. Antihypertensive drugs may be able to induce the development of ADRs, particularly in elderly women receiving multiple drug treatment that may be related to drug-drug interactions. The "start low, go slow" approach, which is intended to minimize dose-related ADEs that hinder compliance, is effective if proper follow-up and dosage titration are provided.

It is important to motivate the healthcare providers to understand their role and responsibility in the detection, management, documentation, and reporting of ADRs, as also all the essential activities for optimizing patient safety.

Antihypertensive Effect from Non-antihypertensive Medications

Assoc. Prof. Weranuj Roubsanthisuk, M.D.

Department of Medicine, Faculty of Medicine Siriraj Hospital, Mahidol University.

There is more information demonstrating blood pressure (BP)-lowering effect of non-antihypertensive medications. Hypertension (HT), diabetes mellitus (DM), and dyslipidemia are common risk factors leading to atherosclerosis and cardiovascular events and are usually found in the same individuals. Therefore, pleiotropic effects of novel medications, such as BP-lowering effect from antidiabetic medications, are of great interest among researchers. There are many publications showing certain BP-lowering effect of glucose-lowering drugs, including thiazolidinediones (TZDs), dipeptidyl-peptidase-4 (DPP-4) inhibitors, glucagon-like peptide-1 (GLP-1) receptor agonists, and sodium-glucose co-transporter 2 (SGLT2) inhibitors, lipid-lowering drugs, including 3-hydroxy-3-methylglutaryl-coenzyme A (HMG-CoA) reductase inhibitors or statins and niacin, vitamin D, coenzyme Q10, and melatonin.

In addition to its glucose-lowering effect, a 12-week treatment with dapagliflozin, one of the SGLT2 inhibitors, reduced average daytime BP in subjects with type 2 DM comparable to the treatment with hydrochlorothiazide. However, only hydrochlorothiazide lowered nighttime BP as compared with placebo. Subjects treated with dapagliflozin also had a minor decrease in plasma volume and body weight and a minor increase in plasma renin activity and serum aldosterone level, indicating that it might induce certain degree of volume depletion similar to subjects who were treated with diuretics. In another study which included subjects with DM and HT who already got renin-angiotensin system blockers, BP reduction induced by dapagliflozin was greater among patients who were on either beta-blockers or calcium antagonists than those who were on thiazide diuretics. A meta-analysis of randomized control trials comparing DPP-4 inhibitors with placebo or other antidiabetic treatments was recently available. DPP-4 inhibitors significantly lowered BP more than placebo (∆systolic BP ~3 mmHg), but less than SGLT2 inhibitors (∆systolic BP ~4.4 mmHg), and not different from sulphonylureas, TZDs, GLP-1 receptor agonists, and other antidiabetic agents. Regarding GLP-1 receptor agonists, liraglutide 1.2 mg/day had significant BP-lowering effect when compared with placebo (∆systolic BP ~5.6 mmHg) or glimepiride (∆systolic BP ~2.4 mmHg) but no difference when compared with sitagliptin or rosiglitazone. TZDs were also shown to lower BP around 3.5/1.8 mmHg in a meta-analysis.

Statin therapy also has a relatively small but statistically significant effect on BP. They induced BP reduction of around 2/1 mmHg. There was a trend towards greater BP reduction in subjects with higher baseline BP. Post hoc analyses of some clinical trials also support a chronic and dose-dependent BP-lowering effect of niacin.

Should We Go Optimal? (Pro)

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Hypertension is a major risk factor for cardiovascular events. In general, insight from a large meta-analysis of prospective epidemiology has demonstrated that the log-linear relation between BP and rate of mortality from CAD or stroke appears to begin at valves around 115/75 mmHg without and J-shaped relation in subjects with or without risk factors, but free from overt cardiovascular disease. Recently, there have been 2 studies which support the strategy "Lower is the better". Firstly the SPRINT compared intensive blood pressure reduction with conventional strategy (a goal systolic blood pressure of less than 120 mmHg vs a goal of less than 140 mmHg). Among hypertensive patients at high risk for cardiovascular events but without diabetes and prior stroke, the lower target group of less than 120 mmHg systolic blood pressure had a 25% lower relative risk for the primary composite end point of myocardial infarction, acute coronary syndrome, stroke, acute decompensated heart failure, and cardiovascular death as compared with the group with a target of less than 140 mmHg. The lower-target group also had 27% lower risk for all-cause mortality and 43% lower risk for cardiovascular death. This result differed from ACCORD trial which failed to demonstrate a significant improvement in cardiovascular outcomes among high risk diabetic adults treated to a goal systolic blood pressure of less than 120 mmHg. The recent second trial was a meta-analysis including 123 studies and 613, 815 patients. The SPRINT also has been included in this new meta-analysis. It showed that blood pressure lowering treatment was associated with significant risk reductions for major cardiovascular end point, proportional to the degree of blood pressure reduction. For every 10 mmHg reduction in systolic blood pressure, and independently blood pressure and most CV disease at baseline, the relative risk reduction was as follow :

- 20% for major CV events
- 17% for CAD

- 27% for stroke
- 28% for CHF
- 13% for all death

In contrast, the CV benefits of therapy varied by two baseline comorbidities. Major CV event risk reductions were proportionally greater for patients with diabetes or chronic kidney disease compared with those without these conditions.

In conclusion, lower is the better with target of normotensive range (such as ≈ 130 mmHg systolic blood pressure or less) without drug side-effect. Treating blood pressure to a lower level than currently recommendation could greatly reduce major CV events and also potentially save more lives.

Should we go optimal BP control? (Con.)

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The results of Sprint trial announced in Nov.2015 opens a lot of debate and discussion about how far we should go below 140 mmHg systolic BP as recommended by JNC 8. The trial was well designed and valid for the reduction of CV events in intensive BP control group (<120mmHg) for high risk hypertensive patients without exclusion criteria. However, the result cannot be applied to all hypertension population. The major exclusion criteria include stroke , DM , CHF (LVEF<35%) , proteinuria > 1 gm/d , and CKD with GFR<20 ml/min/1.73m^2 (MDRD). The benefit to go for optimal BP control was contributed mainly by reduction of all heart failure and CVD death to make the primary outcome statistically significant. It was not due to the reduction of MI, ACS or stroke. Although all SAE reports were not different between the two groups but more hypotension, syncope , electrolyte abnormality and acute kidney injury were noted in intensive group. The Invest trial reported CV events increasing in systolic BP <120 mmHg in diabetes patients with CAD. The Advance trial did not showed the benefit of tight BP systolic control in diabetic patients but experiencing more drug side effects. The J-curve effect for systolic BP control seems to play a role. We have to tell risks and benefits to the non-diabetic hypertensive patients before applying the systolic intensive BP control especially the ones who have no CKD that the treatment may cause the 30% reduction of GFR more than the standard BP control. The alternative way of better BP control is by non-pharmacological treatment which can avoid all the drug adverse effect. We need more time and meticulous analysis before we can change our practice guideline for systolic BP target. The economical analysis, patient's tolerability and adherence are all important consideration.

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