

Prehypertension in DM

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Introduction

- Hypertension is a powerful risk factor for cardiovascular (CV) morbidity and mortality.
- The coexistence of hypertension and type 2 diabetes is devastating to the CV system
(Grossman E, Messerli FH. Ann InternMed 1996;125:304–310).
- Lowering blood pressure (BP) is especially beneficial in diabetic patients, and therefore the goal BP in these patients is 130/80 mmHg rather than 140/90 mmHg, which is the goal in the general population *(Chobanian AV. JAMA 2003 - Mancia G, J Hypertens 2007).*

Introduction

- The Joint National Committee (JNC) VII introduced the term “prehypertension,” which is defined as BP levels of 120–139 mmHg for systolic and 80–89 mmHg for diastolic BP, respectively (*Chobanian AV. JAMA 2003*).
- Because the goal BP in diabetic patients is 130/80 mmHg, the question arises as to what the definition of prehypertension should be in these patients.
- This is a trial to analyze the available data to determine how to define prehypertension in diabetes.

PREHYPERTENSION

- In December 2002, The Lancet published a large meta-analysis that changed fundamental definitions in the hypertension field (*Lewington S, Lancet 2002*).
- The authors reviewed 61 observational prospective studies that held data on the relationship between BP and vascular mortality.
- They obtained information from almost 1 million subjects with a total follow-up of 12.7 million person-years.

PREHYPERTENSION

- Each increase in 20/10 mm Hg almost doubles the risk for CV events.
- The relationships between BP and mortality exist over a wide BP range, starting from **115/75** mmHg.

PREHYPERTENSION

- Subjects with prehypertension are more obese and have higher levels of triglycerides and LDL cholesterol and lower levels of HDL cholesterol than their counterpart subjects with normal BP (*Grotto I, Hypertension 2006*).
- In the PAMELA study (*Mancia G, Hypertension 2005*), the prevalence of type 2 diabetes, impaired fasting blood glucose, and hypercholesterolemia increased progressively from “optimal” to “normal,” “high normal,” and elevated office systolic or diastolic BP.

PREHYPERTENSION

- during follow-up, subjects with prehypertension are more susceptible to developing true hypertension and coronary atherosclerosis (*Grossman A, Aviat Space Environ Med 2006 - Fletcher MJ, Ann Intern Med 2008*).
- Thus, it is possible that the heavy burden of CV disease in prehypertension is driven by the high prevalence of other CV risk factors, such as type 2 diabetes and metabolic syndrome.

DIABETIC PREHYPERTENSION

- It is clear that systolic BP levels of 130–139 mmHg or diastolic BP levels of 80–89 mmHg that are considered prehypertension in the general population, are defined as hypertension in patients with type 2 diabetes.
- Thus, prehypertension should be defined differently in patients with type 2 diabetes.

DIABETIC PREHYPERTENSION

- The upper level of diabetic-prehypertension should be 130 mmHg for systolic and 80 mmHg for diastolic BP.
- The main questions are, what the optimal BP levels for diabetic patients and what should the lower threshold be for diabetic prehypertension?.

DIABETIC PREHYPERTENSION

- The recent Stop Atherosclerosis in Native Diabetic Study (SANDS) showed that, in diabetic patients, aggressive treatment (LDL cholesterol to 72 mg/dl and systolic BP to 117 mmHg (115–118)) was more effective than standard treatment (LDL cholesterol to 104 mg/dl (101–106) and systolic BP to 129 mmHg (128–130).) in regression of carotid intimal medial thickness and left ventricular mass (*Howard BV, JAMA 2008*).

DIABETIC PREHYPERTENSION

- The study is small and no benefit was observed in clinical events.
- Nevertheless, the results suggest that reducing systolic BP from 129 to 117 mmHg is beneficial.
- So, may be 110/70 or is a suitable lower threshold.

DIABETIC PREHYPERTENSION Implications

- The implication of this definition is that almost all adults with type 2 diabetes will have either hypertension or diabetic prehypertension.
- The importance of this implication will depend on how should we deal with diabetic prehypertension.

TREATMENT OF DIABETIC PREHYPERTENSION

No Pharmacological therapy

- In the general population, there are no outcome studies showing any benefit of drug treatment in prehypertension.
- (TROPHY) study used candesartan (*Lewington S, Lancet 2002*) and (PHARAO) study used ramipril (*Vasan RS, N Engl J Med 2001*) to treat prehypertensive patients. However, non of the two studies showed benefit in terms of prevention of CV events.

TREATMENT OF DIABETIC PREHYPERTENSION

No Pharmacological therapy

- No data are available on CV event prevention by drug reduction of diabetic prehypertension.
- (ABCD) study (*Grotto I, Hypertension 2006*), 480 type 2 diabetic patients with baseline normal BP (140/90 mmHg), intensive BP control (average of 128/75 mmHg).
- (ADVANCE) trial, 11,140 patients with type 2 diabetes were randomized to treatment and in the active treatment (BP 136/73 mmHg).
- analysis of subgroups revealed that in patients with no history of hypertension, active treatment did not reduce CV events.

TREATMENT OF DIABETIC PREHYPERTENSION

No Pharmacological therapy

- There is no evidence that antihypertensive treatment is beneficial in patients with diabetic prehypertension.
- the cost and benefit of drug treatment should be taken into account.
- Thus, it seems that with the present evidence, it would be unjustified to recommend drug treatment in diabetic prehypertension.

SO.....

- diagnosis of diabetic prehypertension does not necessarily lead to prescription of an antihypertensive treatment.
- In diabetic prehypertension, lifestyle modifications may be enough as long as the BP levels remain in the prehypertension range and target organs are not affected.

What Is The Benefit

- Reinforce the value of lifestyle modifications in patients with diabetes.
- Adding one more objective to the already present objectives of glycemic control and correction of dyslipidemia.

THANK YOU