

“Do I really need blood pressure pills?”

Thomas W. Wilson, MD, FRCPC; and Merne P. Wilson, RN, BScN, MSc

CardioCase presentation

Tanya's Case

Tanya, a 26-year-old African-American graduate student, is referred for the assessment of high BP. She is concerned that she will have to take medication for the rest of her life, but has no specific complaints or symptoms.

Her BP was 156/102 mmHg during a routine visit 6 months ago. Subsequent office readings were 148-168 mmHg/94-100 mmHg. She has no home or drugstore readings. She denies having chest pain or excessive dyspnea on moderate exertion, a past history of renal disease, or snoring.

She has never smoked and rarely consumes alcohol. Her only medication is ethynodiol diacetate and ethinyl estradiol daily for the past 4 years.

Both Tanya's parents are hypertensive and are currently on medication. There is no family history of diabetes or early cardiovascular disease.

Examination

On examination, Tanya is found to have the following:

- BMI: 26.6
- Waist circumference: 90 cm
- BP (average): 155/98 mmHg
- Heart rate: 72 bpm
- No clinical left ventricular hypertrophy
- No carotid, abdominal or femoral bruits
- No edema

For more on Tanya, see page 24.

CardioCase discussion

What laboratory or imaging tests should we order?

Current Canadian Hypertension Education Program (CHEP) recommendations include just five tests:

1. A urinalysis
2. Basic biochemistry including electrolytes and serum creatinine
3. Fasting glucose

4. Fasting lipid profile
5. An EKG¹

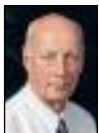
In Tanya's case, there were no significant abnormalities on any of these. As there is no other clinical clue to a secondary cause of hypertension and a strong family history of hypertension, these basic tests should suffice.

Should we ask Tanya to stop the OC?

Earlier OCs, containing 50 µg of estrogen and 1 mg to 4 mg of progestin, caused hypertension in about 5% of users.² Modern OCs contain ≤ 30 µg of estrogen and are not generally associated with hypertension. Should Tanya wish to continue, we should accede.

Should Tanya be offered drug therapy for hypertension immediately?

Given that her office BP readings have remained > 140/90 mmHg for several months and her family history of hypertension, we can accept the diagnosis of hypertension. Recommending drug therapy is a different matter. At her age and the severity of her hypertension, her calculated coronary artery disease or stroke risk is < 2% in 10 years.³ Although antihypertensive drug therapy may reduce that risk by one-third, the absolute benefit over 10 years is small. On the other hand, treating her now may prevent changes to her cardiovascular system that would manifest themselves more than 10 years in the future. There is little to be lost in delaying drug therapy for six months.



Dr. Wilson is a Professor and Head, Department of Medicine, University of Saskatchewan and Saskatoon Health Region, Saskatoon, Saskatchewan.



Ms. Wilson is the Nurse Coordinator, Cardiovascular Risk Factor Reduction Clinic, University of Saskatchewan, Saskatoon, Saskatchewan.

Although antihypertensive drug therapy may reduce the risk by one-third, the absolute benefit over 10 years is small.

Should she be offered non-pharmacologic therapy?

Non-pharmacologic therapy, often called “lifestyle changes,” can lower BP in the short term (weeks-to-months). Interventions which are generally believed to be effective include:

- A weight reduction in the obese (systolic BP [SBP] of 5 mmHg to 20 mmHg per 10 kg of weight loss)
- Adopting the Dietary Approaches to Stop Hypertension (DASH) eating plan (SBP reduction of 8 mmHg to 14 mmHg)
- Reducing dietary sodium intake to 100 mmol (6 g of salt) q.d. (SBP reduction of 2 mmHg to 8 mmHg)
- Increasing mild aerobic exercise to 30 minutes q.d. (SBP reduction of 4 mmHg to 9 mmHg)
- Reducing alcohol consumption to < 9 drinks per week (SBP reduction of 2 mmHg to 4 mmHg)

By adhering to these changes, it is possible that Tanya could attain a goal BP of ≤ 140/90 mmHg. Furthermore, these interventions may benefit other cardiovascular risk factors and give Tanya an active role in her treatment.⁴ Care should be taken to avoid a feeling of failure if she does not attain her goal. I often say to my patients: “Just think how bad your hypertension would be had you not made these lifestyle changes.”

More on Tanya...

Final comment


Tanya receives dietary and fitness counselling. Over the next few months she loses 3 kg and her waist reduces to 87 cm. Her BP remains in the range of 145/95 mmHg. After further discussion, she agrees to a trial of hydrochlorothiazide (12.5 mg q.d.) She suffers no adverse effects and her BP is now about 138/85 mmHg.

The average Canadian adult consumes about 150 mmol of salt (9 g) q.d.; most of this is in the foods we eat rather than added at the table.

What about reducing salt intake?

The average Canadian adult consumes about 150 mmol of salt (9 g) q.d.; most of this is in the foods we eat rather than added at the table. To reduce salt intake to 100 mmol q.d. requires planning; primarily avoiding foods that are processed, especially “ready to eat” foods. A considerable lobby exists to convince the food industry to reduce the amount of salt added during processing. In hypertensive people this could reduce BP; the change in normotensive persons is less convincing.⁵ Furthermore, it was found that in those individuals whose salt intake was < 100 mmol q.d. in 1976 to 1980 actually showed

a slight increase in mortality over the next 14 years.⁶ This observational study cannot implicate a low salt intake as being harmful, but does raise questions.

It is possible that only a fraction of the population is sensitive to high salt intake. Weinberger has shown that about half of hypertensive and one quarter of normotensives are “salt sensitive” (their BP increases by > 10 mmHg when they are exposed to a high salt diet).⁷ We found that rats which fail to increase expression of genes coding for certain enzymes, become hypertensive on a high salt intake. Rats that increased expression of such genes remained normotensive.⁸ Whether this holds true for humans is uncertain.⁹ 

References

1. Padwal RS, Hemmelgarn BR, McAlister FA, et al: The 2007 Canadian Hypertension Education Program Recommendations for the Management of Hypertension: Part 1- Blood Pressure Measurement, Diagnosis and Assessment of Risk. *Can J Cardiol* 2007; 23(7):529-38.
2. Woods JW: Oral Contraceptives and Hypertension. *Hypertension* 1988; 11(3 pt2):11-5.
3. Anderson KM, Wilson PW, Odell PM, et al: An Updated Coronary Risk Profile. A Statement for Health Professionals. *Circulation* 1991; 83(1):356-62.
4. Chobanian AV, Bakris GL, Black HR, et al: The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure: The JNC 7 Report. *JAMA* 2003; 289(19):2560-72.
5. Midgley JP, Matthew AG, Greenwood CM, et al: Effect of Reduced Dietary Sodium on Blood Pressure: A Meta-Analysis of Randomized Controlled Trials. *JAMA* 1996; 275(20):1590-7.
6. Cohen HW, Hailpern SM, Fang J, et al: Sodium Intake and Mortality in the NHANES II Follow-Up Study. *Am J Med* 2006; 119(3):275-84.
7. Weinberger MH: Salt and Blood Pressure. *Curr Opin Cardiol* 2000; 15(4):254-7.
8. Sankaralingam S, Desai KM, Glaeser H, et al: Inability to Upregulate Cytochrome P450 4A and 2C Causes Salt Sensitivity in Young Sprague-Dawley Rats. *Am J Hypertens* 2006; 19(11):1174-80.