New Guidelines on Diet and Blood Pressure

Thomas G. Pickering

The publication of a new American Heart Association (AHA) scientific statement on dietary influences on blood pressure is very timely.1 “You are what you eat” may be a cliché, but the importance of diet in our lives cannot be underestimated, and hardly a week goes by without some new fad diet appearing on the scene. There is agreement that all the modifiable environmental factors that influence blood pressure, diet is the most important. But one of the ongoing debates is the extent to which hypertension should be treated by lifestyle changes or by drugs. Although these are not necessarily mutually exclusive, the issue is relevant because physicians’ time and resources are limited. According to the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) classification,2 more than half of American adults are either hypertensive or prehypertensive, and most of the latter are destined to become hypertensive if they live long enough. The AHA statement lists 4 specific dietary components as having very strong scientific support for their effects on blood pressure: 2 (salt and alcohol intake) raise the pressure, whereas 2 others (potassium and omega-3 fatty acids) lower it. In addition, body weight is strongly related to blood pressure, and 2 composite diets—Dietary Approaches to Stop Hypertension (DASH) and a vegetarian diet—are considered to lower the pressure.

Although all hypertensive patients should be counseled about the influence of diet on blood pressure, we should remember that people can only eat one diet at any one point in time and that the emphasis should be on general health rather than focusing just on blood pressure. Salt restriction was one of the earliest dietary interventions used to control hypertension, and although the Kempner rice diet was effective at lowering the blood pressure in some patients, it was quite unsuited for long-term adoption. Both the DASH and vegetarian diets are highly practicable3 and have presumed benefits for the prevention of chronic disease other than hypertension, such as heart disease and cancer.

One of the problems with dietary intervention is that it requires paying considerable attention to the choice of food and knowledge of its ingredients. Advising a patient to restrict alcohol is simple in principle, because everyone knows which drinks have alcohol and which do not. But increasing the intake of potassium and omega-3 fatty acids is not straightforward, other than by taking pills. Although there are published lists of which foods contain high amounts, these are not items that are memorized by most patients or doctors. Furthermore, the widely acknowledged success of the DASH diet can be attributed to the fact that all the studies that proved its value were feeding studies in which the participants were provided with their meals.3–6 In PREMIER,6 so far the only large-scale study of the DASH diet in which patients had to buy and prepare their food, the blood pressure changes seen with the adoption of the DASH diet were disappointingly small, and this could be largely explained by analyses of their actual food intake, which showed that they rarely achieved the target levels.

The studies that have proven that dietary and other lifestyle changes can lower blood pressure have almost all been quite labor intensive. In the PREMIER study,6 for example, participants in the active treatment group received 14 group and 4 individual counseling sessions over a 6-month period. The AHA statement acknowledges that healthcare providers are usually unable to provide the sort of intensive counseling that was used in the successful dietary intervention trials. This is too often interpreted as meaning that physicians can adopt an essentially nihilistic attitude toward dietary advice. However, one of the more surprising findings of the PREMIER study was that the “Advice Only” group, which was intended as the control group, showed almost as big a blood pressure drop as the group that got the intensive counseling. A relevant analogy here is smoking cessation, which is a well-studied example of the effectiveness of behavioral interventions. It has been documented that even a brief period of counseling (3 minutes or less) from a physician can double patients’ quit rate, and more intensive interventions can greatly increase this number.7 Even though the absolute numbers of quitters remain quite small, there are major health gains for those who do succeed. The same considerations may apply to dietary counseling. Although the DASH diet is potentially complex, for those patients who are seriously interested, there is a book giving detailed description of its benefits,8 and information is also available on the Internet (http://www.nhlbi.nih.gov/health/public/heart/hbp/dash/).

For the overwhelming majority of patients with established hypertension, drug therapy will continue to be the mainstay of treatment and the dietary changes merely adjunctive. There seems to be little point in obsessing about patients’ salt intake when all they need do is take a diuretic. But for people who are classified as being prehypertensive, the benefits of drug treatment, if any, are unproven. JNC 7 acknowledges this and recommends lifestyle changes as the best way to prevent or delay the onset of hypertension. Although, as stated by JNC 7, people who are prehypertensive have a very high (90%) risk of eventually developing hypertension, this transition is not inevitable. The Trials Of Hypertension Prevention (TOHP)9 showed that there is a potential for delaying the...
onset of hypertension through dietary means such as weight loss and salt restriction. However, salt restriction on its own results in relatively small changes, and weight loss is very hard to maintain for any length of time. The problem here is that our metabolic regulation is set to retain stored energy, presumably as a result of evolution when food supplies were scarce. One example of this is that when we restrict caloric intake, our metabolic rate slows down to compensate for this. The prevention of weight gain has much better prospects as a strategy for the prevention of hypertension than actual weight loss.

One reason why dietary and other lifestyle factors are so important in people with prehypertension is that blood pressure is only one of a cluster of risk factors. An analysis of subjects enrolled in the TROPHY study, all of whom had blood pressures between 130 to 135/85 to 89 mm Hg (the upper end of the prehypertensive range), found that in only 4% was blood pressure the only cardiovascular risk factor; 59% of the subjects had 3 or more of the features of the metabolic syndrome, and 84% were overweight. Putting such individuals on antihypertensive drugs would thus only partially reduce their risk.

The average age of the TROPHY subjects was 49, but it is well established that hypertension in children is also closely associated with increased body weight. That these are causally related has been shown in an observational study that found blood pressure increased in children whose weight increased during a 10-year period and decreased in those who lost weight. In an interventional study, overweight adolescents were randomized to a 20-week period of diet, diet plus exercise, or a control group that had no intervention. Blood pressure decreased by 16 mm Hg in the diet plus exercise group, by 10 mm Hg in the diet group, and increased by 4 mm Hg in the control group. Obese children not only tend to have higher blood pressure than thin children, but also high cholesterol and signs of the vascular dysfunction (endothelial dysfunction and wall thickening) that may herald later atherosclerosis. A study of overweight children found that these changes are reversible with a program of diet and exercise.

The issues relating diet and cardiovascular health are at least as much societal as medical, as acknowledged by the AHA statement. Lifestyle habits are established at a very young age and are hard to break once established. The Institute of Medicine recently issued a report titled Food Marketing to Children and Youth: Threat or Opportunity which was mandated by Congress. The main conclusions of the report were that there is strong evidence that marketing of foods and beverages to children influences their diets and that most of these foods have excessive calories, fats, sugars, and sodium. There is evidence that the consumption of sugar-sweetened drinks is associated with the development of obesity, and that the consumption of high fructose corn syrup, which is the most widely used sweetener, may be one of the culprits. The IOM report lists several potential targets where interventions might be appropriate. These include the family, schools, government, the food and advertising industries, and restaurants. Most of these would apply to improving the diets of adults as well.

References
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