USANA Technical Bulletin

Hypertension

Description

- Hypertension, or high blood pressure, is defined in an adult as a blood pressure greater than or equal to 140 mm Hg systolic pressure or greater than or equal to 90 mm Hg diastolic pressure. High blood pressure directly increases the risk of coronary heart disease and stroke, especially along with other risk factors.[1]

Causes

- Essential hypertension is of unknown etiology, but family history, obesity, high fat or high sodium diets, stress, and a sedentary lifestyle are all associated with hypertension.
- Secondary hypertension is caused by an underlying factor such as kidney, endocrine, or neurological disease.

Types

- High blood pressure can either be essential or secondary. Essential hypertension is treated with medication by physicians. Secondary hypertension is a symptom of an underlying problem. When the cause of the hypertension is corrected, blood pressure will return to normal.

At Risk

- High blood pressure can occur in children or adults, but is particularly prevalent in blacks, middle-aged and elderly people, men, obese people, heavy drinkers and women who are taking oral contraceptives. Individuals with diabetes mellitus, gout, or kidney disease also have a higher frequency of hypertension.[1]

Prevention and Management

- There are many medications prescribed by physicians used to treat hypertension.
- Dietary and lifestyle changes also may help control high blood pressure. For example, blood pressure often returns to normal in obese people who lose weight.
- Excessive alcohol intake (more than two ounces daily) raises blood pressure in some people and should be restricted.
- Increasing physical activity, as long as it is approved and guided by the physician, can reduce blood pressure in some people.
- People who smoke are advised to quit because it increases the risk of high blood pressure.

- Some people with mild hypertension can lower their blood pressure by reducing sodium in their diet.[2] The American Heart Association recommends that healthy American adults reduce their sodium intake to no more than 2400 milligrams per day.
- Supplemental vitamin C decreased blood pressure in borderline hypertensive and normotensive subjects.[3]
- Calcium intakes of 800 mg/day were associated with lower blood pressures.[4]
- Magnesium supplementation was effective with hypertensive patients.[5]
- Antioxidant levels in the serum of hypertensive patients are generally lower. This may indicate that lower intakes of antioxidants increases risk for hypertension.[6]

Sources of Additional Information

- www.amhrt.org

Abstracts

Mark SD, Wang W, Fraumeni JF et al. Lowered risks of hypertension and cerebrovascular disease after vitamin/mineral supplementation: The Linxian Nutrition Intervention Trial. Am J Epidemiol 1996;143:658-64. A total of 3,318 men and women from a region in rural China were randomized to receive daily either a multiple vitamin/mineral supplement or a placebo. Deaths that occurred in the participants were ascertained and classified according to cause over the 6-year period from 1985 to 1991. At the end of supplementation, blood pressure readings were taken, and the prevalence of hypertension was determined. There was a slight reduction in overall mortality in the supplement group (relative risk (RR) = 0.93, 95 percent confidence interval (CI) 0.75-1.16), with the decreased relative risk most pronounced for cerebrovascular disease deaths (RR = 0.63, 95 percent CI 0.37-1.07). This benefit was greater for men (RR = 0.42, 95 percent CI 0.19-0.93) than for women (RR = 0.93, 95 percent CI 0.44-1.98). Among the survivors, the presence of elevations in both systolic and diastolic blood pressures was less common in those who received the supplement (RR for men = 0.43, 95% CI 0.28-0.65; RR for women = 0.92, 95 percent CI 0.68-1.24). This study indicates that supplementation with a multivitamin/mineral combination may have reduced mortality from cerebrovascular disease and the prevalence of hypertension in this rural population with a micronutrient-poor diet.

Tse WY, Maxwell SR, Thomason H et al. Holder antioxidant status in controlled and uncontrolled hypertension and its relationship to endothelial damage. J Hum Hypertens 1994;8:843-9. Hypertension is associated with an increased risk of atherosclerosis. Free radical oxidative damage has been implicated in the atherogenic process. We measured levels of the antioxidants uric acid, thiols, vitamins C, A and E as well as the total antioxidant capacity in 21 normotensive controls, 22 patients whose hypertension was controlled on drugs and 30 patients with uncontrolled hypertension. Mean BPs in the groups were 125/76, 132/80 and 181/98 mmHg, respectively. When compared with controls, both hypertensive groups had significantly lower serum ascorbic acid (54 +/- 5 vs. 37 +/- 6 vs. 38 +/- 5 mumol/l, $P < 0.05$) and albumin-corrected thiol levels (9.91 +/- 0.18 vs. 8.69 +/- 0.20 vs. 8.92 +/- 0.19 mumol/g, $P < 0.05$). The levels of the other antioxidants did not differ significantly between the groups. Levels of von Willebrand factor, a marker of endothelial damage, were correlated with SBP but not with antioxidant status. We conclude that hypertensive subjects have lower levels of the antioxidants vitamin C and thiols and this may reflect greater oxidative consumption. The implications for atherogenesis and endothelial function and integrity in hypertension are discussed.

References

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[2] Williams GH, Hollenberg NK. Sodium-sensitive essential hypertension : Emerging insights into an old entity. J

Am Col Nutr 1989;8:490-94.
[3] Osilesi O. Blood pressure and plasma lipids during ascorbic acid supplementation in borderline hypertensive and normotensive adults. Nutr Res 1991;11:405-12.
[4] McCarron DA. Dietary calcium and blood pressure: modifying factors in specific populations. Am J Clin Nutr 1991;54:215S-19S.
[5] Mark SD, Wand W, Fraumeni JF et al. Lowered risks of hypertension and cerebovascular disease after vitamin/mineral supplementation: the Linxian Nutrition Intervention Trial. Am J Epidemiol 1996;1:658-64.
[6] Tse WY, Maxwell SR, Thomason H et al. Antioxidant status in controlled and uncontrolled hypertension and its relationship to endothelial damage. Hypertens 1994;8:843-9.