

Essential Hypertension –A Review Article

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Abstract:

Hypertension (HTN) or high blood pressure, sometimes called arterial hypertension, is a chronic medical condition in which the blood pressure in the arteries is elevated. Blood pressure is summarised by two measurements, systolic and diastolic, which depend on whether the heart muscle is contracting (systole) or relaxed between beats (diastole). This equals the maximum and minimum pressure, respectively. Normal blood pressure at rest is within the range of 100–140mmHg systolic and 60–90mmHg diastolic. High blood pressure is said to be present if it is often at or above 140/90 mmHg. Hypertension is classified as either primary (essential) hypertension or secondary hypertension. Hypertension puts strain on the heart, leading to hypertensive heart disease and coronary artery disease if not treated. Hypertension is also a major risk factor for stroke, aneurysms of the arteries (e.g. aortic aneurysm), peripheral arterial disease and is a cause of chronic kidney disease. Dietary and lifestyle changes can improve blood pressure control and decrease the risk of health complications, although drug treatment is still often necessary in people for whom lifestyle changes are not enough or not effective.

INTRODUCTION:

Essential hypertension (also called primary hypertension or idiopathic hypertension) is the most common type of hypertension, affecting 95% of hypertensive patients,^{[1][2][3][4]} it tends to be familial and is likely to be the consequence of an interaction between environmental and genetic factors. Prevalence of essential hypertension increases with age, and individuals with relatively high blood pressure at younger ages are at increased risk for the subsequent development of hypertension and it makes them suffer a lot. Hypertension increases the risk of cerebral, cardiac, and renal events.^[5]

ETIOLOGY:

Etiological factors correlated with hypertension in adults have also been associated with blood pressure elevations in youth. Intrauterine malnutrition, family history of hypertension, obesity, particularly excess abdominal fat, insulin resistance, high dietary sodium intakes, low dietary intakes of calcium, potassium and magnesium, physical inactivity, high alcohol intakes, tobacco use, drug use (e.g., cocaine, ecstasy, anabolic steroids), emotional stress, diet pill use, oral contraceptives are the factors associated with development of hypertension.^[6,7,8] An inadequate supply of nutrients may program changes in foetal structure and metabolism, increasing the risk of hypertension and other diseases in later life.^[9] Hyperinsulinemia and insulin resistance are also associated with the development of hypertension which leads to many problems. The elevated plasma insulin levels may cause sodium sensitivity.^[10,11] Adequate dietary potassium, calcium, and magnesium intakes have been associated with lower blood pressure in youth. Potassium and calcium intakes are below recommended levels, particularly in adolescent females, while median intakes of phosphorus and protein, which promote calcium loss, are high.^[12] Lack of physical activity may increase the risk of developing hypertension by 20-50%.

RISK FACTORS:

Having a personal family history of hypertension increases the likelihood that an individual develops hypertension.^[13] Essential hypertension is four times more common in black than white people, accelerates more rapidly and is often more severe with higher mortality in black patients.^{[14][15][16][17]} Obesity can increase the risk of hypertension to fivefold as compared with normal weight, and up to two-thirds of hypertension cases can be attributed to excess weight. More than 85% of cases occur in those with a Body mass index greater than 25.^[18] Another risk factor is salt sensitivity which is an environmental factor that has received the greatest attention. Approximately one third of the essential hypertensive population is responsive to sodium intake.^[19] The increased sodium ion concentration stimulates ADH and thirst mechanisms, leading to increased reabsorption of water in the kidneys, concentrated urine, and thirst with higher intake of water. Also, the water movement between cells and the interstitium plays a minor role compared to this. The relationship between sodium intake and blood pressure is controversial. Reducing sodium intake does reduce blood pressure, but the magnitude of the effect is insufficient to recommend a general reduction in salt intake.^[20] Renin elevation is another risk factor. Renin is an enzyme secreted by the juxtaglomerular apparatus of the kidney and linked with aldosterone in a negative feedback loop. In consequence, some hypertensive patients have been defined as having low-renin and others as having essential hypertension. Low-renin hypertension is more common in African Americans than white Americans, and may explain why African Americans tend to respond better to diuretic therapy than drugs that interfere with the Renin-angiotensin system. High renin levels predispose to hypertension by causing sodium retention through the following mechanism: Increased renin → Increased angiotensin II → Increased vasoconstriction, thirst/ADH and aldosterone → Increased sodium reabsorption in the kidneys (DCT and CD) → Increased blood pressure. Hypertension can also be caused by Insulin resistance and or hyperinsulinemia, which are components of syndrome

X, or the metabolic syndrome. Also, some authorities claim that potassium might both prevent and treat hypertension.^[21] Cigarette smoking, a known risk factor for other cardiovascular disease, may also be a risk factor for the development of hypertension.^[22] Several studies have shown that hypertensive patients and their children handle salt differently. It is suggested that due to the presence of a sodium transport inhibitor, leucocytes of hypertensive patients are found to have a reduced sodium pump activity.^[23] This results in increased intracellular sodium leading to high intracellular calcium which is responsible for increased vascular tone. Due to abnormal sodium handling, renal sodium excretion is affected which leads to increase in extracellular fluid volume, an increased venous return and increased cardiac output. Autoregulation to achieve tissue perfusion leads to vasoconstriction and raised peripheral vascular resistance. Salt restriction interrupts pathophysiologic chain of events by lowering extracellular fluid volume and lowers blood pressure similar to diuretic therapy.^[24]

PREVENTION:

It is therefore recommended that all cases of hypertension should restrict their sodium intake to approximately 6 Gms of sodium chloride salt or 2.4 Gms of sodium per day. In order to achieve that much sodium restriction, following measures should be adopted.^[25] a) Reduce salt for cooking by 50%. b) Substitute natural foods for processed foods. c) Avoid salty snacks such as pickles, chutneys, pappad, salted nuts. d) Use salt substitutes containing potassium. f) Avoid medications such as antacids as these are rich in salt. It is now agreed that reducing salt intake is an essential. The universal recommendation is to consume less than 10 Gms of NaCl per day. WHO recommends 5 Gms or less especially in populations known to have a high salt intake or a high prevalence of blood pressure.^[26] Chain smokers have a sustained increase in blood pressure. So prevention from smoking is must here. These are widely practised for stress reduction. So far no substantial evidence in support of benefits of yoga, meditation is available. Yet the availability of some controlled research, its overall cost-effectiveness and its lack of side effects make further investigations of yoga a topmost priority. Clinically several clinical trials are in progress.^[27] Epidemiological studies have revealed a strong relation between obesity and hypertension. So maintaining the body fitness and preventing the body from obesity is very necessary.^[28] Maintaining a good health and exercising regularly prevents hypertension. Eating a balanced diet and monitoring the blood pressure is very must.

TREATMENT:

Beta-blocker is one of a drug used to reduce hypertension. It works by making our heart beat more slowly and with less force, thereby reducing blood pressure. But they are found to be less effective than other treatments. Calcium channel blockers are very helpful because they keep calcium from entering the muscle cells of the heart and blood vessels. This method widens the arteries and reduces the blood pressure.

CONCLUSION

Adopting a healthy lifestyle is critical for the prevention of HBP and an indispensable part of managing it. We must think of these changes as a "lifestyle prescription" and make every effort to comply with them. If we have been diagnosed with high blood pressure, also called hypertension, or are concerned because we have some of the risk factors for the disease, we must understand this: while there is no cure, high blood pressure is manageable. Maintaining a healthy life style is necessary.

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