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Hypertension

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ABSTRACT

Hypertension is the most significant contributor to burden of disease worldwide. There are different environmental as well as biological factors involved to increase blood pressure. Stress can increase blood pressure by stimulating the nervous system to release huge amounts of vasoconstrictions. Hypertension is the main cause of cardiovascular disease. Cardiovascular diseases cause death worldwide. We can reduce hypertension by taking healthy diet and possible cost-effectiveness. Despite several therapies new methods and techniques are also needed to reduce blood preSssure and cardiovascular diseases..

Introduction

High blood pressure is known as hypertension. It is a long-term medical illness in which blood pressure in arteries is persistently high. Systolic blood pressure, when the heart beats measures the blood pressure in arteries that is equal to or more than 140 mmHg and diastolic blood pressure, when the heart rests between beats measures the blood pressure in arteries is equal to or more than 90 mmHg that is an important risk for death and disease and remains the basis of cardiovascular diseases. The occurrence of hypertension has increased particularly in low- and middle-income states. It is observed that low socioeconomic status will increase hypertension in people.

Etiology: Primary hypertension, an increase in blood pressure without any known cause is primary hypertension. Primary hypertension develops long-lasting kidney illness due to endothelial wounds caused by local and systemic inflammatory mediators. **Secondary hypertension,** an increase in blood pressure due to underlying causes such as inherited narrowing of the aorta, Cushing's syndrome, Neurological ailments like brain lumps and head injury, sleep apnea, pills like oral contraceptives, nonsteroidal anti-inflammatory drugs and cocaine, cirrhosis of the liver [1].

Risk factors: Age, it is observed that the chances of occurrence of hypertension in the older population are more than younger. The Chance of coronary artery disease occurrence is more after 50 years of age. **Alcohol,** alcohol consumption is a major risk factor for hypertension. Persons taking daily intake of three standard-sized drinks or more have more chances of higher blood pressure. Hypertension will be managed by reducing the consumption of alcohol. **Smoking,** Cigarette smoking increases the risk of hypertension by increasing the stimulation of the sympathetic nervous system. Smoking also exerts cardiovascular diseases. After high cigarette smoking there is no chance of blood pressure lowering. **Diabetes Mellitus,** Higher blood pressure is thoroughly associated with increased vascular fluid capacity and peripheral vascular resistance. Peripheral artery resistance triggered by vascular transformation and increased body fluid capacity related to insulin resistance brought hyperinsulinemia and hyperglycemia in patients that have diabetes mellitus. Systemic blood pressure will be increased by these mechanisms. **Excessive dietary intake of sodium,** High sodium intake can cause hypertension by increasing the concentration of sodium in kidney, as a result amount of sodium will be increased in our body resulting in muscular contraction. That may result in an increase in peripheral resistance and blood pressure elevation and in the end hypertension. **Gender**, in men and women, awareness, treatment and knowledge about how to control hypertension is are mainly different. Men have more chances of hypertension as compared to women due to a lack of awareness**. Family history,** people with a hypertension family history have more chances of hypertension. **Obesity**, Hypertension has a direct relationship with obesity. With weight gain ultimately increase in blood pressure is observed in kids and adolescents. **Sedentary lifestyle,** those people that have low physical activity with low energy expenditures have more chances of obesity and as a result, are associated with high blood pressure. It is observed that obesity is more prominent at a high level in males and females who spend sedentary life style. **Stress,** Stress can produce a large number of vasoconstricting hormones by frequent raise of blood pressure and stimulus of the nervous system as a result hypertension will occur. Different factors involved in stress such as job stress, environmental and social issues, and race.

Pathophysiology: The usual blood pressure is continued by four mechanisms such as, **Sympathetic nervous system activities,** Heart rate and cardiac contraction activities will be increased by increasing the central nervous system activity when blood pressure is declined. Release of renin from the kidney will increase by increasing heart rate and cardiac contraction. By activation of the sympathetic nervous system rise in cardiac output and systemic vascular confrontation result in increased blood pressure of arteries**. Activities of vascular endothelium,** Blood vessels are covered by a single layer of cells of vascular endothelium. It will produce vasoactive materials and growth factors like nitric acid and endothelin etc. Blood pressure will be increased by these substances. **Activities of the renal system,** Blood pressure can be controlled by the renin-angiotensin system. By reducing salt consumption renin is released from the juxtaglomerular part of the kidney. The sympathetic nervous system is also responsible for the release of renin. Renin is used for the conversion of angiotensinogen to angiotensin I. Angiotensin I is an inactive substance that will be converted into angiotensin II by angiotensin-converting enzyme. Angiotensin II is a strong vasoconstrictor and is used to increase blood pressure. **Activities of endocrine system,** aldosterone will secrete when angiotensin II is stimulated in the adrenal cortex a part of the kidney, aldosterone is responsible for the retention of sodium and water in the kidney. As a result, blood pressure will increase.

Clinical Features: Blood pressure is sometimes elevated without causing any symptoms, so it is also known as silent killer disease. In some patient's symptoms of hypertension will progress like, Severe headache, Blurred vision, faintness, nausea, vomiting, tiredness, confusion, chest pain, shortness of breath, irregular heartbeat, papilledema, bleeding from the nose, blood in urine, nervousness, sweating, difficulty in breathing, Facial flushing, blood spots in eyes, seizures. **Diagnosis:** Hypertension FAQs, for diagnosis of hypertension your doctor asks questions about your health condition and sign and symptoms. Health care provider takes your medical history and measure blood pressure with the help of stethoscope. The cuff is used to check the blood pressure that is put around your arms. The cuff should be set around the arm that it should not be too big or too small, otherwise blood pressure readings will differ. The cuff is overblown by using a pump. At first-time blood pressure is measured in two arms if there is a difference. Then check in that arm in which higher reading is observed. Hypertension is diagnosed if blood pressure is equal to or greater than 130/80 mm Hg. Blood pressure is divided into two stages, Stage 1 hypertension, and Stage 2 hypertension. In stage 1 hypertension the blood pressure is between 130/80 and 139/39 mm Hg. in stage 2 hypertension blood pressure is 140/90 mm Hg or higher.

Tests: Ambulatory monitoring. If blood pressure monitoring is done for a longer period of time such as for six or 24 hours then it is called ambulatory monitoring. **Lab tests,** in-lab urine and blood tests, are done to check the cause of blood pressure. Such as to check the cholesterol level, kidney and liver functions, and blood sugar level. **Electrocardiogram (ECG),** ECG did to check the heartbeat of the patients. It measures how fast or slow the heart beats. During ECG electrodes are attached to the chest and arms. wires attach the sensor to a machine which shows the results.

Management: Lifestyle modifications, Lifestyle changes may help to prevent, control, or manage your blood pressure. You must follow the instructions provided by your doctor which may include: Always eat a healthy diet with less amount of salt, daily exercise and other physical activities, lose weight and maintain a healthy weight, avoid alcohol

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consumption, not smoking, Sleep for 7 to 8 hours, manage your stress, always try to take slow and deep breathing to feel relax [2]. **Pharmacological therapy: Diuretics,** Diuretics are known as water pills that remove water and salt from our body. are used for the treatment of hypertension for the longer time period by decreasing sodium reabsorption in the distal convoluted tubule, ascending limb and loop of Henle. Diuretics reduce blood pressure and decrease the risk of cardiovascular diseases. Most commonly used diuretics are **thiazide(chlorothiazide), loop(furosemide), potassium sparing(amiloride) diuretics. Beta-blockers,** these medications are used to beat the heart slowly with less speed by reducing the heart workload and blood vessels. The most commonly used-blockers are **e.g., atenolol, carvedilol, labetalol, metoprolol and nebivolol. Alpha-blockers,** are used to decrease blood pressure by avoiding norepinephrine from contracting the muscles in the walls of arteries and veins. As a result, the walls remain to relaxed and blood pressure will decrease. Examples of Alpha blockers are **doxazosin, prazosin and terazosin.** Vasodilators, these are used to prevent the contraction of muscles and narrowing of arteries by acting on the muscles of arteries. Examples of the most commonly used vasodilators are **Nitroglycerine, Sodium nitroprusside. ACE inhibitors,** these medications prevent vasoconstriction by reducing the conversion of angiotensin-I to angiotensin-II and lower blood pressure. Captopril and ramipril are the most commonly used ACE inhibitors. **Calcium channel blockers,** these medications cause vasodilation by reducing the entry of calcium into the cells and also decrease heart rate**.** The most commonly used calcium channel blockers are **Amlodipine, and verapamil** [3]**.**

References

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