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A REVIEW ON HYPERTENSION AND IT'S TREATMENT

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ABSTRACT

Millions of people have hypertension, often known as high blood pressure, which is a widespread medical illness and a significant public health issue. It can cause cardiovascular disease, stroke, and renal failure and is brought on by a number of variables including genetics, lifestyle, and environmental factors. Blood pressure readings are used to diagnose the condition, and treatment options include lifestyle changes, pharmaceutical therapies, and surgical procedures. The patient's age, pre-existing medical disorders, and blood pressure levels all influence the therapy option. The risk of complications can be greatly decreased and patient outcomes can be dramatically improved with early identification and effective care of hypertension.

KEYWORDS: Hypertension, Blood Pressure Level, Heart Failure, Inhibitors.

INTRODUCTION

Hypertension, also referred to as high blood pressure, is a chronic medical condition marked by an increase in blood pressure that is higher than usual. It is a major contributor to kidney failure, heart disease, and stroke. Millions of people experience hypertension, making it one of the main public health issues. We shall address the pathogenesis, diagnosis, and therapy of hypertension in this review study.

Pathophysiology

Genetics, way of life, and environmental variables are just a few of the causes of hypertension. Blood artery constriction brought on by increased activity of the renin-angiotensin-aldosterone system (RAAS), which controls blood pressure, is the main

mechanism underlying the development of hypertension. As a result, peripheral resistance and cardiac output both rise, raising blood pressure levels.

Table 1.1: Range of hypertensions.

Parameter	Normal Range	Hypertension Range
Systolic BP	<120 mmHg	130-139 mmHg
Diastolic BP	<80 mmHg	80-89 mmHg
Blood pressure	<120/80 mmHg	130/80 mmHg or higher
Heart rate	60-100 bpm	__
Respiratory rate	12-20 bpm	__
Body temperature	36.5-37.5 °C	__

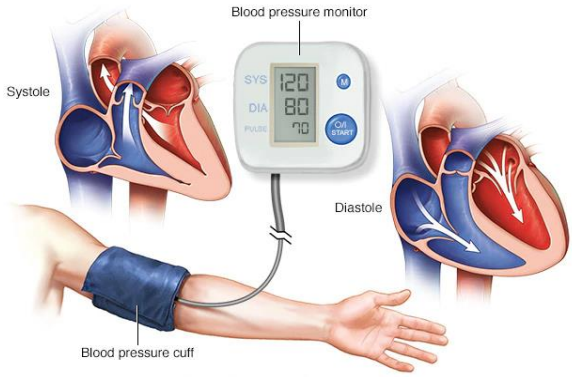
Causes

1) **Genetics:** Having a family history of high blood pressure can make you more likely to get it.
2) **Lifestyle:** factors can raise the risk of hypertension, including poor diet, inactivity, and being overweight or obese.
3) **Age:** Hypertension is more likely to develop as people age.
4) **Chronic stress:** Chronic stress raises blood pressure.
5) **Medical conditions:** Kidney disease, diabetes, and sleep apnea are a few of the illnesses that can cause hypertension.
6) **Medication:** Some medications, including birth control pills, NSAIDs (nonsteroidal anti-inflammatory drugs), and decongestants, might raise blood pressure.
7) **Smoking and Excessive alcohol use:** Smoking and excessive alcohol use are both risk factors for hypertension.

It is significant to emphasise that while hypertension frequently has no symptoms, routine blood pressure checks are necessary to identify and treat this condition.

Diagnosis

Blood pressure readings are used in the diagnosis of hypertension. A systolic blood pressure of less than 130 mmHg or a diastolic blood pressure of less than 80 mmHg is considered to be hypertension by the American College of Cardiology and American Heart Association (ACC/AHA). Repeated blood pressure readings are necessary to confirm the diagnosis of hypertension. To find any underlying causes of hypertension, laboratory tests such a complete blood count, lipid profile, and renal function tests may be carried out in addition to blood pressure readings.



Treatment

Lifestyle changes, pharmaceutical therapies, and even surgical procedures are all used to treat hypertension. Angiotensin-converting enzyme inhibitors (ACEIs), angiotensin II receptor blockers (ARBs), beta-blockers, calcium channel blockers, and other kinds of drugs are among the pharmacological therapies for hypertension.

Classification of antihypertensive drugs

1) Beta blockers

These medications lower the heart's pace and contraction force, which lowers blood pressure by blocking the beta-adrenergic receptors.

Examples: Metoprolol, Propranolol, Atenolol, Timolol.

2) ACE Inhibitors

These medications reduce the activity of the angiotensin-converting enzyme (ACE), which reduces the generation of the potent vasoconstrictor angiotensin II.

Examples: Lisinopril, Enalapril, and Captopril.

3) Diuretics

These medications encourage the body to excrete sodium and water, which lowers blood volume and blood pressure.

Examples: Thiazide Diuretics, Loop Diuretics, Potassium-Spring Diuretics.

4) Angiotensin II Receptor Blockers

These medications cause vasodilation and a reduction in blood pressure by attaching to the receptors for angiotensin II and blocking its activity.

Examples: Losartan, Valsartan, and Candesartan.

5) Calcium channel blockers

These medications reduce blood pressure by relaxing blood arteries and preventing calcium ions from entering smooth muscle cells.

Examples: Amlodipine, Verapamil, and Diltiazem.

6) Renin inhibitors

These medicines reduce renin's ability to produce angiotensin II by blocking its activity.

Examples: Aliskiren, Telmisartan, Moexipril.

7) Alpha blockers

These medications reduce blood pressure and cause vasodilation by blocking alpha-adrenergic receptors.

Examples: Doxazosin and Prazosin.

8) Vasodilators

These medications relax blood vessels and lower blood pressure because they directly affect the smooth muscle of blood vessels.

Examples: Hydralazine and Minoxidil.

In certain cases, a combination of these medications may be used to improve blood pressure control. The patient's age, pre-existing illnesses, blood pressure levels, and choice of antihypertensive medication all influence that decision.

CONCLUSION

To avoid the onset of cardiovascular disease, a stroke, and kidney failure, hypertension must be properly managed as a chronic medical condition. Lifestyle changes, pharmaceutical therapies, and even surgical procedures are all used to treat hypertension. The patient's age, pre-existing medical disorders, and blood pressure levels all influence the therapy option. Early detection of hypertension and proper management of it can lower the risk of consequences and enhance patient outcomes.

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