

## Hypertension

- Hypertension is high blood pressure that is the force which the blood put against the walls of arteries.
- It is also an important risk factor for the future development of cardiovascular disease.

Blood Pressure : Systolic / Diastolic

Both are important for determining B.P of an individual.

- Hypertension is usually found in the old age.  
Systolic pressure is the blood pressure when heart beats & diastolic blood pressure when heart is at rest.



## etiology

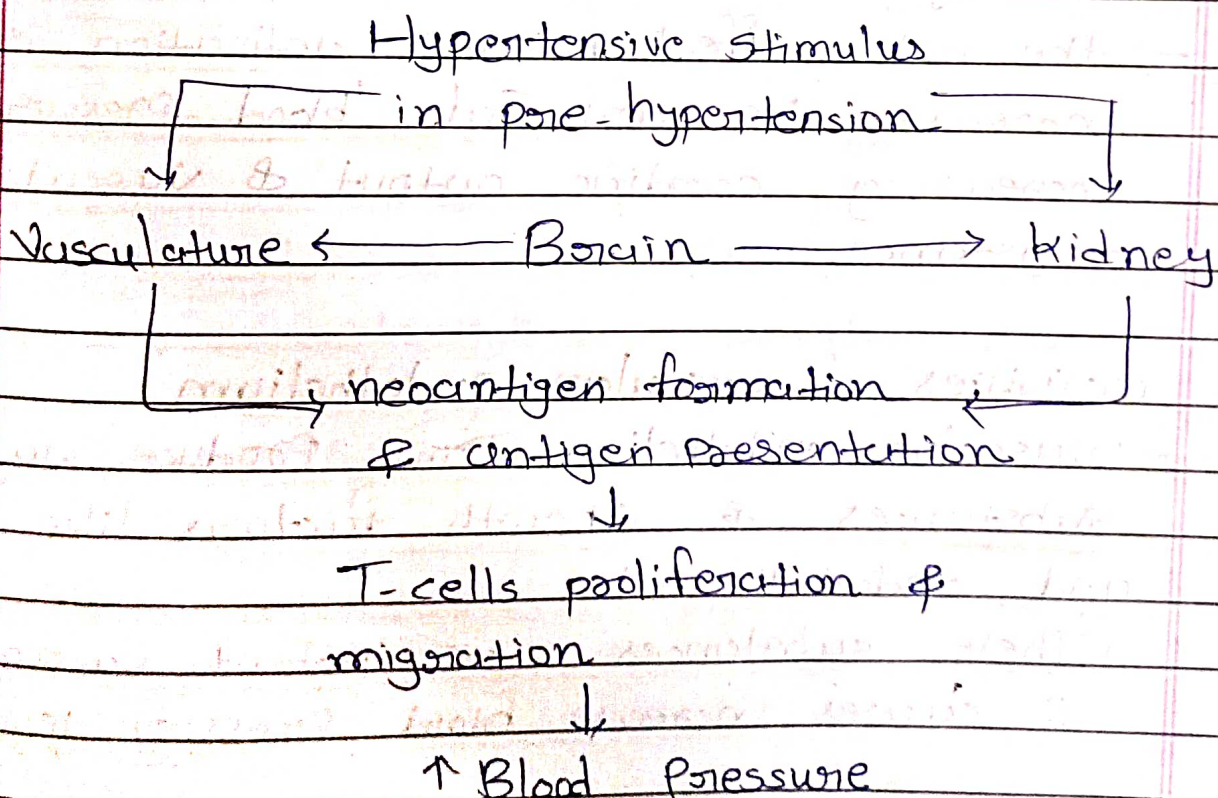
### Primary

- genetic variation
- obesity
- stress
- ageing
- constriction of arteries
- alcoholism
- insulin secretion

### Secondary

- Renal failure
- diabetes mellitus
- ↑ aldosterone level
- Pheochromocytoma (Tumour in adrenal gland)
- acromegaly (excess secretion of GH)
- Drug induced

## Pathophysiology





— Normal blood Pressure is maintained by ~~three~~ <sup>four</sup> mechanisms:

- Sympathetic nervous system activities
- activities of vascular endothelium
- ~~activities of renal system~~
- activities of endocrine system

- Sympathetic nervous system activities

→ Increased SNS activity increases the heart rate & cardiac contraction

→ Increased heart rate & cardiac contraction produce Vasoconstriction in peripheral arterioles & promote the release of renin from kidney

→ the net effect of SNS activation is to increase the arterial blood pressure by increasing cardiac output & vascular resistance.

- activities of vascular endothelium

→ Vascular endothelium will produce vasoactive substances & growth factors like nitric acid, endothelin etc.

→ These substances are potent vasoconstrictor & causes increase blood pressure level

- activities of endocrine system

→ when angiotensin-II is stimulated in adrenal cortex it will secrete aldosterone

→ aldosterone will stimulate the kidneys



to retain Sodium & water Thus BP & cardiac output will get increased.

## Treatment / Management

### ① life style modification

- weight reduction
- dietary sodium reduction
- reduce alcohol
- exercise
- stress management

### ② Pharmacological therapy

• Diuretics :- helps the kidney to Inhibit Sodium reabsorption

ex - chlorthalidzide, furosemide

• Beta blockers :- it reduce workload of the heart & causing heart to beat slowly

ex - Atenolol, propranolol

• Alpha blockers :- it causes peripheral vasodilation of blood vessels

ex - Prazosin

• Vasodilators :- Preventing muscles from tightening & arteries from narrowing

ex - nitroglycerin, Sodium nitro prusside

• ACE inhibition :- this will reduce the conversion of <sup>angiotensin</sup> Aldosterone I to <sup>angiotensin</sup> aldosterone II & prevent vasoconstriction  
ex - Captopril, Ramipril

• Calcium channel blockers :- these will block the movement of extra cellular calcium into cells  
ex - amlodipine, Verapamil