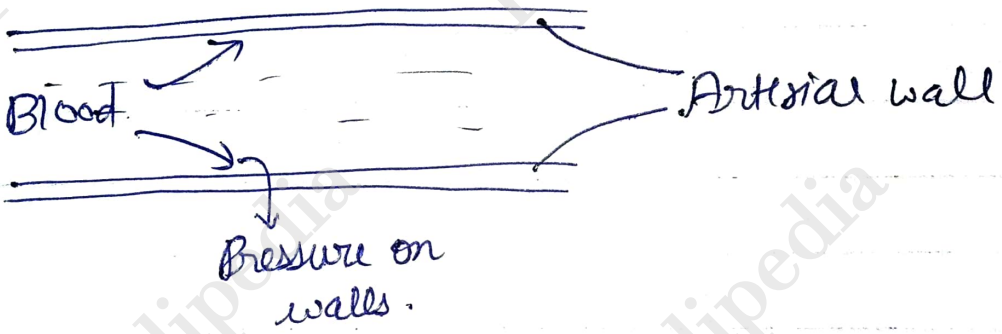
Hypertension

- **Hypertension**: The increase in the Pressure of Blood on the walls of Arteries.
  (↑se in BP)

Normal BP = $\frac{120}{80}$ mmHg Abnormal (high) = $\frac{140}{90}$ < high.



Types → Primary — causes are unknown
Types → Secondary — causes are known.

Hypertension Causes:

⇒ Kidney Problem (Abnormality in filteration, Reabsorption etc.)
↳ ↑se in Sodium Level

⇒ Thyroid Problem: Abnormal Thyroid hormones

hyperthyroidism

↓

Be Thyroid

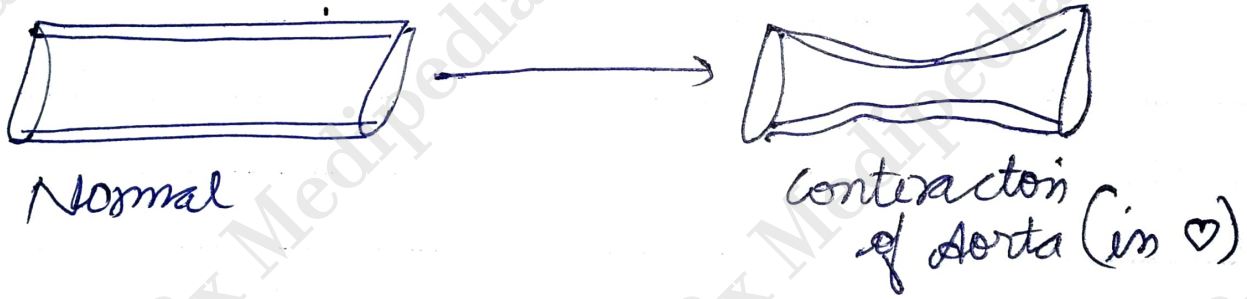
↓

↑se calcium Retension

↓

↑se BP (hypertension)

⇒ Contraction of Aorta: The contraction of the Aorta results in Blood Pressure Enhancement.



⇒ Atherosclerosis and Arteriosclerosis

⇒ Nutrition Impairment.

⇒ Alcoholism, drug intake.

Risk Factors :-

→ Increase in Age

→ Family history.

→ obesity

→ Smoking (tobacco)
→ Diet (high/low)
→ Alcoholism
→ Stress condition.
→ Drugs use (cocaine etc)

Antihypertensive Drugs

The drugs used in the treatment of hypertension are known as Antihypertensive Drugs.

Classification

- Diuretics
  - → Chlorthiazide
  - → Hydrochlorthiazide
  - → Metolazone etc
- Renin-Angiotensin System Inhibitors
  - → Benazepril
  - → Enalapril
  - → Imidapril
  - → Spirapril etc
- Sympathetic Inhibitors
  - α-Blockers
    - → Prazocin
    - → Tolazoline
  - β-Blockers
    - → Atenolol
    - → Propranolol
  - Mixed
    - → Labetalol
- Calcium Channel Blockers
  - → Verapamil
  - → Amlodipin
- Vaso-dilators
  - → Hydralazine
  - → Minoxidil etc

Mechanism of Action

☆ Diuretics :- Diuretics increases the formation of urine ↓

Decrease the Reabsorption of components that can cause hypertension (eg- Sodium)

↓

↑se urine output from Body

↓

↓se in Sodium Level in Body can Normalise the Blood Pressure. (Excretes out with urine)

☆ Renin Angiotensin System Inhibitors :-

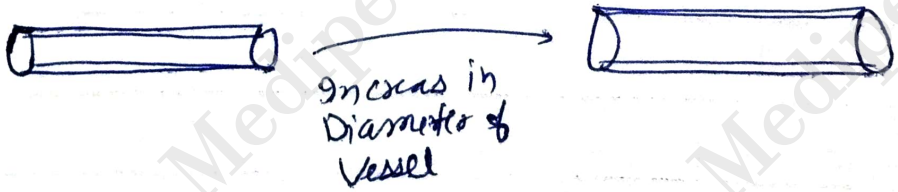
The Barro Receptors (handle Pressure) in Body can Release Renin that converts into Angiotensin 1 and then with help of ACE Enzyme, Angiotensin 1 converts into Angiotensin 2 ~~that~~ that can constricts the Vessles and ↑se BP.

* Renin Angiotensin System Inhibitors (RAS Inhibitors) Can Inhibit the Enzyme ACE that convert Angiotensin 1 into Angiotensin 2.
* RAS Inhibitors also Block the Binding Receptors. to stops the action after Binding
* Also Inhibits the Release of Renin Directly

Sympathetic Inhibitors :-

In this, the drugs can Inhibits the α and β (Alpha and Beta) Receptors in Sympathetic System.

→ α and β Receptors are Blocked and Result in decrease in Vessel Constriction (सिंकुडन)

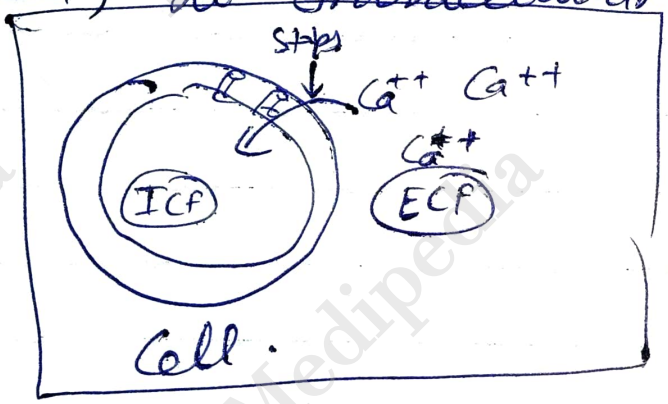


* β-Blockers - Atenolol, Propranolol etc.
* α- Blocker - Prazocin, Tolazoline etc.
* α + β Blocker (Mixed) - Labetalol

Calcium Channel Blockers

(calcium is Responsible for constriction of Blood Vessels that ax major cause of Hypertension)

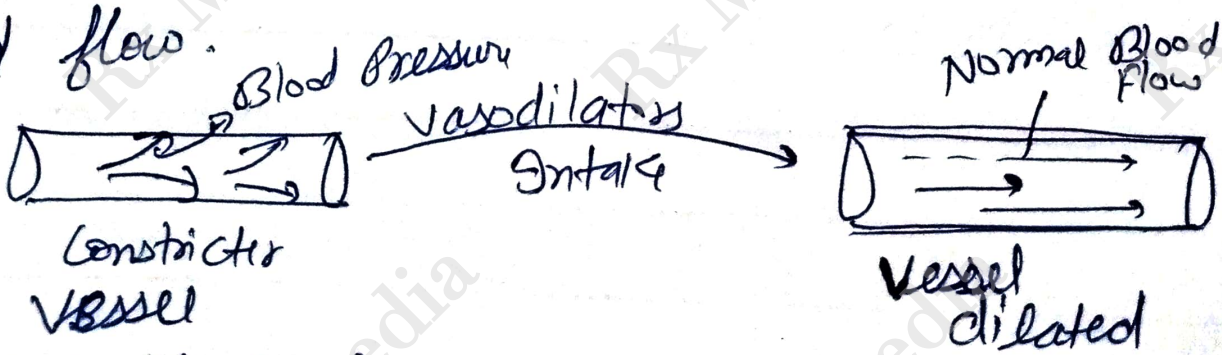
Calcium channel Blockers can ~~dec~~ stops or decreases the Release ~~of~~ or entesana of calcium (Ca^{++}) from Extracellular Fluid (outside /ECF) to Intracellular Fluid (Inside the cell/ICF)



example - Verapamil, Amlodipin etc.

Vasodilators:-

They can increase the Size of Vessel or dilate the Vessels to Better and Normal Blood flow.



Example - Hydralazine, Minoxidil etc

★ In Pregnancy → Angiotensin Blockers and ACE Inhibitors are not Prescribed.