

- One most of the most commonest communicable disease
- Acc to WHO a pop of around 1.2 billion is suffering from hypertension 1 in 4 ♂ 1 in 5 ♀
- In India 29% of population is suffering from hypertension
- 57% of the stroke & 27% of CAD are due to hypertension.

• American Heart Association guidelines (2017):-

- The new hypertension guidelines change the definition of hypertension which is now considered to be any systolic BP measurement of 130 mmHg or higher or - any diastolic BP measurement of 80 mmHg or higher.
- Classification of BP:-

<u>BP category</u>	<u>Systolic BP</u>	<u>Diastolic BP</u>
Normal	<120 mmHg	<80 mmHg
Elevated BP	120-129 mmHg	<80 mmHg
Hypertension Stage 1	130 - 139 mmHg	80 - 89 mmHg
Hypertension Stage 2	≥140 mmHg	≥90 mmHg
Hypertensive urgency	>180 mmHg	>120 mmHg
Hypertensive emergency	>180 mmHg + target organ damage	>120 mmHg + target organ damage



Hypertensive urgencies are associated with severe BP elevation in stable patients without acute or impending change in target organ demanding damage or dysfunction.
Hypertensive emergencies are severe elevations in BP associated with evidence of new or worsening target organ damage.

Treatment recommendations :-

- ① Changes in lifestyle and diet which can reduce systolic BP by approximately 4 to 11 mm Hg for hypertension patients
- ② Diet rich in fruits, vegetables, whole grains and low fat dairy products
- ③ Reducing Na^+ intake
- ④ 1 mm Hg BP reduction for every 1 kg reduction in body wt
- ⑤ Physical activity :- 90 - 150 min of Aerobic exercise per week.
- ⑥ For alcoholic patients reduce the intake to 2 or fewer drinks daily for men and no more than 1 drink daily for women.

Effects of Hypertension :- Boron & Boulpaep

- It is found in ~20% of the adult pop.
- It can damage endothelial cells - arteriosclerosis
- Can lead to CAD, MI, heart failure, stroke and renal failure
- Dysfunction of the mechanisms of long term control of Arterial BP leads to hypertension.
- Chronically hypertensive patients may have diminished activity sensitivity of their arterial baroreceptors.

① Concentric left ventricular hypertrophy

② ① ventricular mass

③ ① myocardial O_2 requirement

④ Ischemic heart disease

• Effect on blood vessels :-

① ① vascular compliance

② ① Atherosclerosis

• Effect on Brain :-

① ① cerebral atherosclerosis

② cerebral hemorrhage

③ Hypertensive encephalopathy

• Effect on Kidney :-

① ① GFR

② ① Tubular function

③ Resulting in proteinuria & hematuria

• Effect on Eye :-

Hypertensive retinopathy

- Management of Hypertension :-

• Pharmacological :-

- Ca^{2+} channel blocker

- Thiazide type diuretics

- β blockers

- ACE inhibitors

- Angiotensin Receptor Blocker

• Non pharmacological :-

- Lifestyle modification

- dietary modification

- Exercise

- Smoking Cessation

Primary hypertension :- In this type of hypertension it is not possible to identify a single specific cause, or the hypertension is of unknown origin.

Excess wt gain (obesity) & sedentary lifestyle may amount for as much as 65-75% of the risk for developing hypertension.

The following characteristics of primary hypertension, among others, are caused by excess wt gain & obesity :-

- ① Cardiac output is $\uparrow$
- ② Sympathetic nerve activity $\uparrow$
- ③ Angiotensin II & Aldosterone levels are $\uparrow$ especially in kidneys
three fold in many obese patients
- ④ Renal pressure natriuresis mechanism is impaired.

Secondary hypertension :-

Hypertension as a result of other medical problems or medication.

Causes :-

- ① Pregnancy (Pre eclampsia)
- ② Renal artery stenosis - Most common cause
 $\rightarrow$ caused mostly by atherosclerotic plaques or any fibro-muscular disease of the renal arterial wall.
- ③ Cumulative obstruction of smaller arteries and arterioles may also produce hypertension often seen in diseases of the renal parenchyma or end stage renal disease.
- ④ Coarctation of the Aorta - proximal to Renal arteries but below the arteries to the head & upper extremities

Acquired

① Primary hyperaldosteronism

② Pheochromocytoma

↳ tumor of adrenal medulla
that relg excess catecholamines

Genetic

① Liddle disease

② Pseudo hypo
aldosteronism type 1

Mendelian

Hypotension :- decrease in systolic blood pressure less than
90 mmHg in adults.

Hypertension

Chronic

Persistent systolic BP
of less than 90 mmHg

Causes :-

- ① 1° adrenocortical insufficiency
- ② Hypopituitarism
- ③ Malnutrition

Symptoms :-

- ① Lethargy
- ② Weakness
- ③ Giddiness

Acute

Sudden fall in
BP

Causes :-

- ① Acute hemorrhage
- ② Severe vomitings
- ③ Acute diarrhea
- ④ Acute MI

Symptoms :-
fainting

Orthostatic

If the systolic
BP falls by 20
mmHg when a
subject assumes
erect posture from
the supine posture.

It results from
Autonomic imbalance

Causes :-

- ① Prolonged standing
- ② strenuous exercise
- ③ diabetes mellitus
- ④ Beri Beri