Ashur University
College of Medicine

Grade 1

Cardiovascular Module
Cardiovascular Medicine
Lecture 2

Hypertension

Ass. Professor Internal Medicine

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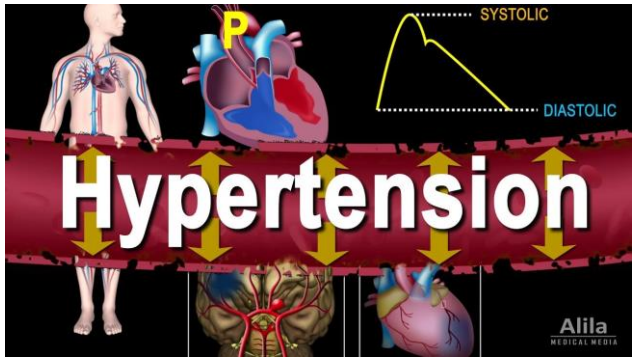


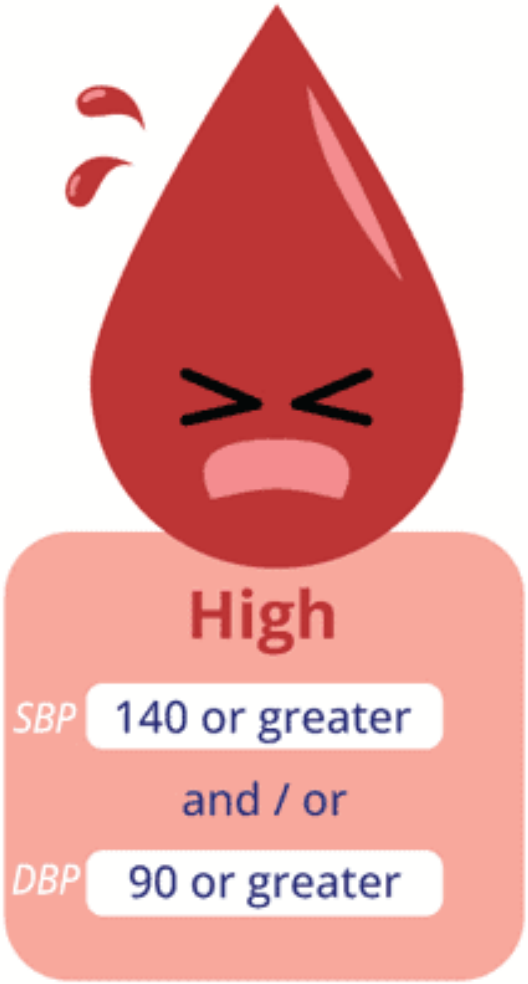


Definition

Hypertension (HTN or HT), also known as high blood pressure (HBP), is a long term medical condition in which the blood pressure in the arteries is persistently elevated.

The **Systolic Blood Pressure (SBP)** will be more than or equal of **140 mmHg**

The **Diastolic Blood Pressure (DBP)** will be more than or equal of **90 mmHg**



Types of hypertension

BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)	and/or	DIASTOLIC mm Hg (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1	130 – 139	or	80 – 89
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2	140 OR HIGHER	or	90 OR HIGHER
HYPERTENSIVE CRISIS (consult your doctor immediately)	HIGHER THAN 180	and/or	HIGHER THAN 120

Etiology

High blood pressure is classified as :

1. Primary (essential) hypertension:

About 90–95% of cases are primary, defined as high blood pressure due to nonspecific lifestyle and genetic factors.

Lifestyle factors that increase the risk include excess salt in the diet, excess body weight, smoking, physical inactivity and alcohol use.

2. Secondary hypertension:

5–10% of cases due to a clearly identifiable cause, such as

chronic kidney disease,

narrowing of the kidney arteries, an

endocrine disorder, or the

use of birth control pills (ContraCeptive Pills = CCP)

Etiology …cont.

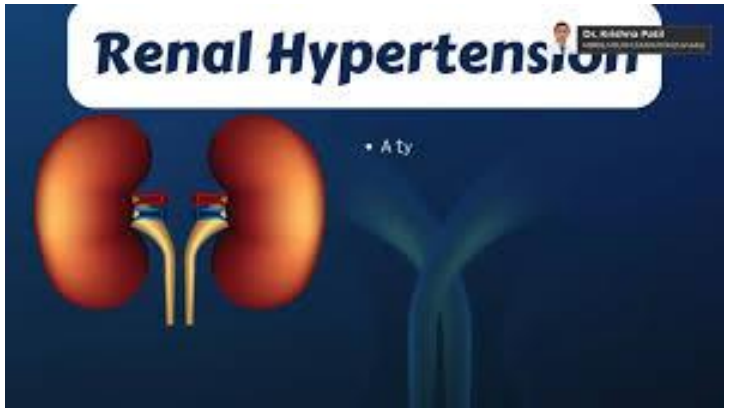
The causes of Secondary HTN includes :

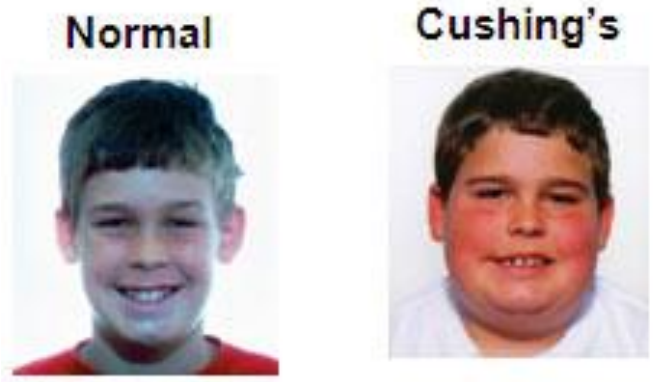
- Congenital narrowing of aorta
- Renal disease
- Endocrine disorders : Cushing's syndrome
- Medications :

  Oral contraceptive pills (CCP),

  NonSteroidal Anti-Infalmmatory Drugs

  (NSAIDs), and cocaine
- Sleep apnea





Risk factors

- Age: chance of Coronary artery disease (CAD) after 50 yrs of age
- Alcohol
- Smoking
- DM
- Excessive dietary intake salt , Sodium Chloride (NaCl)
- Gender
- Family history
- Obesity
- Sedentary life style
- Stress

Pathophysiology

The normal blood pressure is maintained by **four mechanisms** :

1. Sympathetic nervous system activities

2. Activities of vascular endothelium

3. Activities of renal system

4. Activities of endocrine system

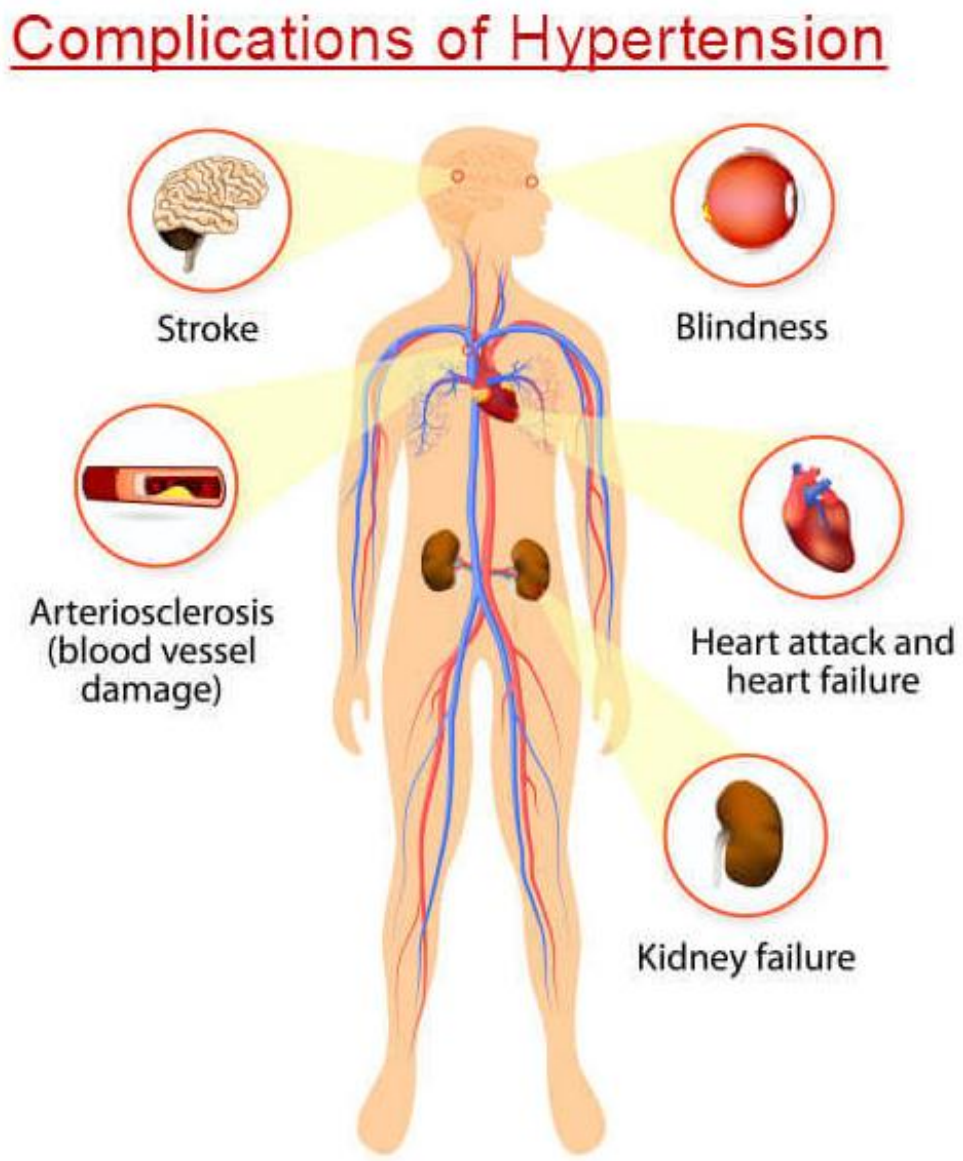
Clinical features

- Some times the high blood pressure does not causes any

symptoms, so that it is known as

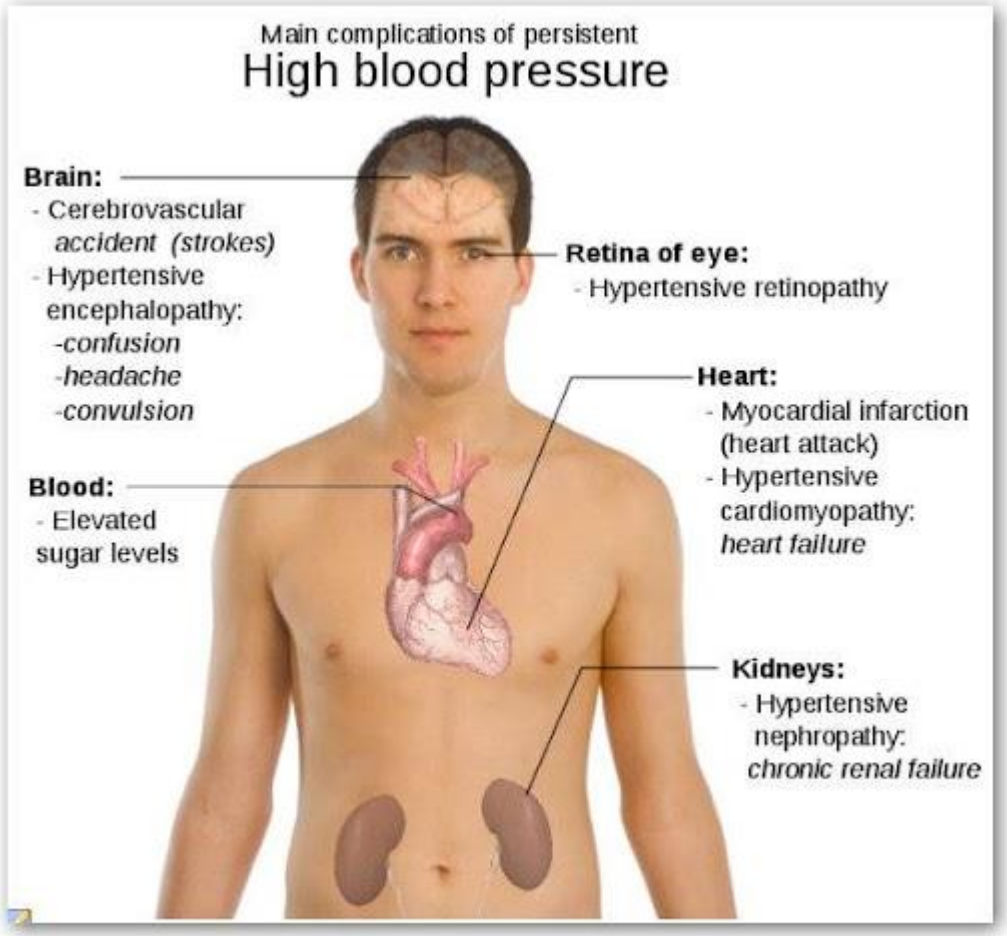
Silent Killer Disease.

- In some patients the symptoms will develop like :
- **Severe headache**
- **Blurred vision**
- **Dizziness**
- **Nausea**
- **Vomiting**



Clinical features …cont.

- Fatigue
- Confusion epistaxis
- Chest pain
- Shortness of breath
- Irregular heart beat
- papilledema



Diagnostic evaluations

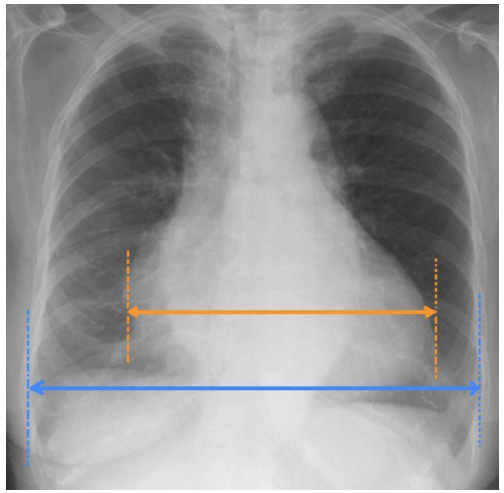
- History
- Medical history of diabetes mellitus
- Physical examination

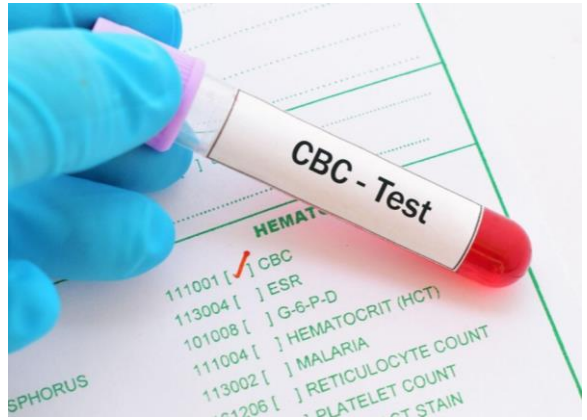
Laboratory investigations:

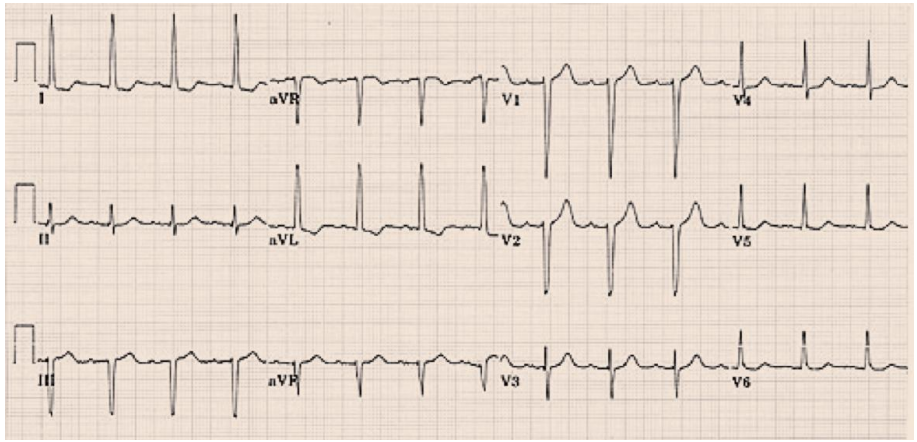
- Complete blood count (CBC)
- Chest x-ray
- ECG

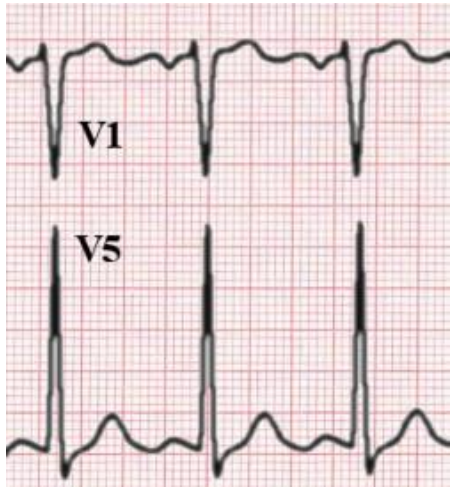












Management

Mainly the management of hypertension is possible by two ways, which include

- **Life style modification**
- **Pharmacological therapy**

Life style modification

10 lifestyle changes that can lower blood pressure without medication :

1. Lose extra weight
2. Exercise regularly
3. Eat a healthy diet : Dietary Approaches to Stop Hypertension (DASH) diet to control hypertension.
4. Reduce salt and sodium in diet
5. Limit or stop alcohol
6. Quit smoking
7. Get a good night's sleep
8. Ease stress
9. Control of blood pressure and regular checkups
10. Control cholesterol and blood sugar

Pharmacological therapy



Various groups of drugs are used for the treatment of hypertension, collectively these drugs are called as **anti-hypertensive drugs**, which includes :

- **Diuretics:** it helps the kidneys to inhibit the sodium reabsorption in the distal convoluted tubules, ascending limb and loop of henle.

  Eg: Chlorothiazide, Furosemide

- **Beta blockers:** These medications reduces the workload of the heart and blood vessal and causing the heart to beat slowly and with less force.

Eg: Metaprolol , Bisoprolol used in HTN with →

Myocardial Infarction(MI) or Heart Failure (HF) .



Pharmacological therapy …cont.

- **Alpha blockers:** These medications causes the peripheral vasodilation of blood vessels. Eg: Prazosin
- **Vasodilators:** These medications acting directly on the muscles in the wall of arteries and preventing the muscles from tightening and arteries from narrowing.

  Eg: Nitroglycerin, Sodium nitro prusside. → →
- **Angiotensin converting enzyme (ACE) Inhibitors and Angiotensin receptor blockers (ARBs) :** This group of medication will reduce the conversion of Angiotensin –I to Angiotensin -II and prevents vasoconstriction.

  Eg: Captopril, Ramipril, Candasartan , Valsartan…→ →







Pharmacological therapy …cont.

- **Calcium channel blockers:** These medicines will block the movement of extra cellular calcium into the cells and causing vasodilation and decreased heart rate.

Eg: Amlodipine, Nifepidine and Virapamil. →



Management of Hypertension … cont.



- **Identify the use of medications**

Such as : Contraceptives, Steroids, NSAID

etc…



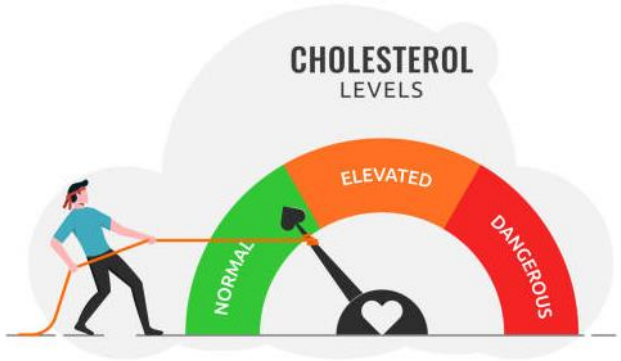
- **Monitor vital signs frequently**

- **Provide low salt diet**

and rich with fruits and vegetables.



- **Monitor the blood cholesterol level frequently**




THANK YOU