Lecture:2

**Hypertension**: is a sustained elevation of the systemic arterial pressure. it is meant *mean arterial pressure* is greater than the upper range of the normal measure. A *mean* arterial pressure greater than 110 mm Hg (normal is about 90 mm Hg) is considered to be hypertensive.

Complications of hypertension :

1.on the heart leads to heart failure or coronary heart disease,

*2.* Rapture of blood vessels in the brain which leads to Cerebral stroke. 3.Effect on kidney cause renal failure.

There are two types of HT :

**A-Essential HT**: occur In about 90-95% of patients , the cause is unknown. It has a strong hereditary tendency.

**B.Secondary HT**: the cause is known .It is classified to

1- renal causes: (e.g) polycystic kidney, renal artery stenosis , glomerulonephritis.

2- Endocrine causes: (e.g) cushing´s syndrome.

3-Others: like coarectation of aorta, Pheochromocytomas (adrenal medullary tumors) , drugs like corticosteroids. Emotion increases the cardiac output and peripheral resistance, and about 20% of hypertensive patients have blood pressures that are higher in the doctor's office than at home, ("white coat hypertension").

**Volume loading HT:** means hypertension caused by excess accumulation of extracellular fluid in the body.

Some types of HT caused by **(combination of volume loading and vasoconstriction)** as in coarctation of aorta which cause reduction in renal blood flow so stimulate rennin angiotensin system .

**Heart failure:** means simply failure of the heart to pump enough blood to satisfy the needs of the body. The failure may involve primarily the right ventricle (cor pulmonale), but much more commonly it involves the left ventricle or both ventricles.

Pathogenesis : HF can be caused from:

-**Coronary artery disease:** if blood clot block blood flow to an area of the heart muscle cause weakening the heart's pumping ability and often leaving permanent damages.

- [**Cardiomyopathy**](http://www.webmd.com/content/pages/9/1675_57821.htm): Damage to the heart muscle from infections or alcohol or drug abuse and others.

-**Conditions that overwork the heart:** including high blood pressure, [valve disease](http://www.webmd.com/content/pages/9/1675_57850.htm), thyroid disease, kidney disease, diabetes, or congenital heart disease. heart has to work harder than it should to circulate blood throughout your body. Over time, the heart muscle may become thicker to compensate for the extra work it must perform. Eventually, heart muscle may become weak to effectively pump blood.

If a heart suddenly becomes severely damaged, such as by myocardial infarction, the pumping ability of the heart is immediately depressed. As a result, two main effects occur: (1) reduced cardiac output and (2) damming of blood in the veins, resulting in increased venous pressure. When the cardiac output falls which cause reduction of arterial blood pressure so stimulation of *baroreceptorreflex*, which is activated by diminished arterial pressure, also the *chemoreceptor reflex*, the *central nervous system ischemic response*, then stimulation of rennin-angiotensin system so increase salt and water retention .Sever fluid retention cause oedema formation in the lung and peripheral tissue in the body.

**Sign and symptom of HF:**

* [shortness of breath](http://medical-dictionary.thefreedictionary.com/Shortness+of+Breath)
* frequent coughing, especially when lying down
* feet, ankles, and legs oedema
* abdominal ascitis and [pain](http://medical-dictionary.thefreedictionary.com/Pain)
* fatigue
* [dizziness](http://medical-dictionary.thefreedictionary.com/Dizziness) or [fainting](http://medical-dictionary.thefreedictionary.com/Fainting)
* sudden [death](http://medical-dictionary.thefreedictionary.com/Death)

When body tissues, such as organs and muscles, do not receive enough oxygen and nutrients they cannot function as well, leading to tiredness and dizziness

**Left sided heart failure**: failure of left ventricle causes increased pulmonary venous pressure, pulmonary venous distention and transudation of fluid into air spaces leading to pulmonary congestion. A person with left-sided heart failure may have shortness of breath and coughing caused by the fluid buildup in the lungs. Pulmonary edema may cause the person to [cough](http://medical-dictionary.thefreedictionary.com/Cough) mucous contains blood.

**Right sided heart failure:** failure of right ventricle causes increased venous pressure, increased fluid transudation so ankle and sacral oedema, ascitis and hepatomegaly because increased venous pressure causes increased resistance to portal flow.