# Disorders of Lipid metabolism:

## 1.Atherosclerosis:

**Atherosclerosis** is a disease in which plaque builds up inside your arteries. Arteries are blood vessels that carry oxygen-rich blood to your heart and other parts of your body. Plaque is made up of fat, cholesterol, calcium, and other substances found in the blood.

Especially LDL will be deposited in the arteries. If LDL cholesterol is deposited in tissues it is called as bad cholesterol.

**Progression of atherosclerosis:**

Atherosclerotic plaque leads to narrowing of vessel wall when proliferative changes occur. Fibrous proliferation is due to liberation of growth factors by macrophages & platelets.

Blood flow through narrow lumen is turbulent, so clot is formed which occludes major vessels. Thrombosis leads to ischemia & finally infarction. Early stages it is reversible by lowering LDL level. As lesion progresses arterial change become irreversible.

**Risk factor for atherosclerosis:**

1) Serum cholesterol level

Normal cholesterol level – below 180 mg/dl

Value above 240mg/dl needs active treatment

2) LDL cholesterol

Normal – under 130mg/dl above 160mg/dl - risk

3) HDL level

It is inversely related to myocardial infarction is antiatherogenic.

Above 65mg/dl protect heart disease Level below 40mg/dl – risk of CAD

Total cholesterol: HDL cholesterol > 3.5, dangerous

LDL: HDL > 2.5 also dangerous

4) Apoprotein level

apo B : apo A1 is more reliable

0.4 is good, 1.4 risk of CAD (Coronary artery disease)

**2.Hypercholesterolemia:**

Increasein plasma cholesterol(>200mg/dl)is known as Hypercholesterolemia.

It is observed in Diabetes mellitus:

It is due to increased cholesterolsynthesis and also the availability of acetyl CoA isincreased.

Hypercholesterolemia is associated with atherosclerosis&coronaryheartdisease.

Deposition of cholesterol esters & lipids in the intima of arterial walls leading to hardening of coronary arteries & cerebral bloodvessels.

Bad cholesterol & goodcholesterol:

LDLCisconsideredbadduetoitsinvolvementin atherosclerosis & relatedcomplications.

LDLC may be regarded as lethallydangerous lipoprotein.

HDLC cholesterol is goodcholesterol.

Highconcentrationscounteractsatherogenesis.

HDLC maybeconsidered as highly desirable lipoprotein.

HDLC-is good cholesterol

LDLC-is bad cholesterol.

## Control of hypercholesterolemia:

Consumption of PUFA: Dietary intake of PUFA reduces the plasma cholesterol levels.

Dietary cholesterol: Cholesterol is found only in animal foods & not in plant foods.

Dietary cholesterol influence on plasma cholesterol is minimal.

Avoidance of cholesterol-rich foods is advocated to be on the safe side.

Plant sterols: Certain plant sterols (sitostanol esters) & their esters reduce plasma cholesterol levels.

They inhibit the intestinal absorption of dietary cholesterol.

Dietary fiber: Fiber present in vegetables decreases the cholesterol absorption from the intestine.

Avoiding high carbohydrate diet: Diets rich in carbohydrates (particularly sucrose) should be avoided to control hypercholesterolemia.

## 3.Obesity:

Obesity is a complex disease involving an excessive amount of body fat. It is a medical problem that increases your risk of other diseases and health problems, such as heart disease, diabetes, high blood pressure and certain cancers.

## 4.Fatty liver:

Fatty liver is also known as hepatic steatosis. Fatty liver occurs when too much fat builds up in liver cells. Although it is normal to have a tiny amount of fat in these cells, the liver is considered fatty if more than 5% of it is fat. Major risk factors include obesity and type 2 diabetes