

Hyperlipidaemias

~~(Hyperlipoproteinemia)~~

There are 3 major lipids in our blood.

- ↳ Cholesterol
- ↳ Triglycerides
- ↳ Phospholipids

Defined as elevated total cholesterol, LDL cholesterol or triglycerides; low HDL cholesterol or combination of these abnormalities

Commonly cause CHD.

Treatment

[A] Non-pharmacological :-

Before starting treatment with a lipid-lowering agent, other below mentioned risk must also be improved :

1. Body weight

Overweight patient has increased risk of dyslipidaemia; they have elevated levels of plasma triglycerides, LDL & lower HDL levels. Lipid profile test is often suggested.

2. Diet

Diet modification should always be encouraged in patient with dyslipidaemia. Patient should receive dietary advice.

3. Fish

Consumption of $\omega 3$ fatty acid decreases levels of triglycerides and LDL-C. There are clear benefits in consuming oily fish in dyslipidaemia.

4. Salt

Decreased amt. of salt in daily intake would be beneficial to this patients.

5. Exercise:

moderat amt. of exe on regular basis have desired effect on the lipid profile of our body.

[B] Pharmacological:

There are 5 main classes of lipid-lowering agents available:

a) Statins

b) fibrates

c) bile acid binding agents

d) cholesterol absorption inhibitors

e) Nicotinic acid and derivatives

1. HMG-CoA enzyme reductase Inhib (Statins)

Most commonly used drug for dyslipidaemia:

They inhibit conversion from HMG-CoA to Mevalonate.

They include:

| | | |
|--------------|----------|----|
| Lovastatin | 20mg | OD |
| Simvastatin | 20mg | OD |
| Atorvastatin | 20-40 mg | OD |
| Pitavastatin | 1-4mg | OD |

Adverse eff - GI complains, headaches, rashes
 sleep disturbances, liver damage

uses :- hyperlipidaemia, hypercholesterol
 Angina, MI, ACUTE coronary diseases.

2. Fibrates

(Lipoprotein - lipase activators)

They are Key for degradation of
 VLDL

| | | |
|-------------|--------|----|
| Gemfibrozil | 600mg | BD |
| Bezafibrate | 400mg | BD |
| Fenofibrate | 200 mg | OD |

Adverse eff - epigastric distress, loose
 motions, rashes, body ache,
 headache, blurred vision.

uses - hyperlipidaemia, hyperlipoproteinaemia

3. Bile α binding agents (Resins)

These are basic ion exchange agents
supplied in chloride (Cl) form.

cholestyramine
colestipol
colesevelam

uses - hyperlipidaemia, atherosclerosis &
coronary disease.

4. Cholesterol / stool absorption inh;

Ezetimibe 10mg OD

5. Triglyceride synthesis inh / Nicotinic α

Nicotinic α / Niacin 100mg TDS

Adverse eff - hypolipidaemia, vomiting,
diarrhoea, peptic ulcer
liver dysfunction & jaundice.

uses - hypertriglyceridaemia
to decrease VLDL-C

Lipid transport

mouth ← fat + cholesterol
(lipid)

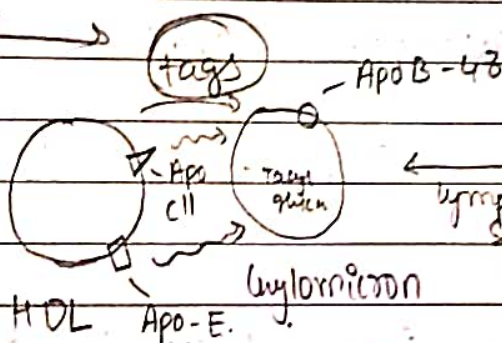
bile salts

INTESTINAL CELL

Microvilli

free fatty acid (FFA) +
monoglycerides +
glycerol

NOTE →

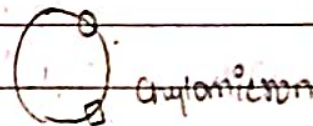


reabsorbed & packaged

Chylomicrons

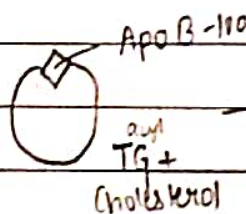
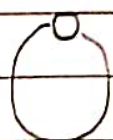
⇒ Apo CII → binds to capillaries

these triacylglycerides are broken into
FFA
glycerol



⇒ Apo E → travels to LIVER (taken up)
by receptors

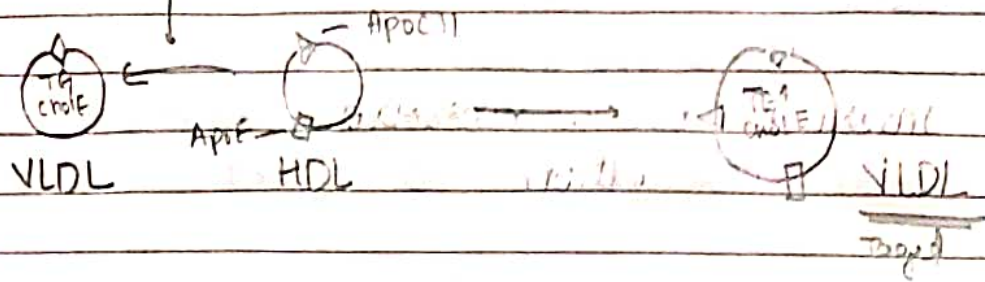
⇒ LIVER



out of
RIVER

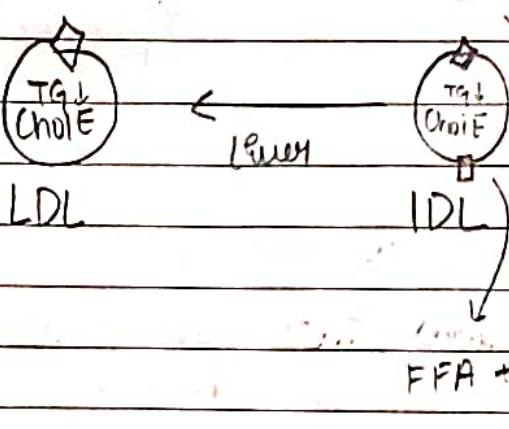
VLDL

⇒ HDL tags this TG + Chole

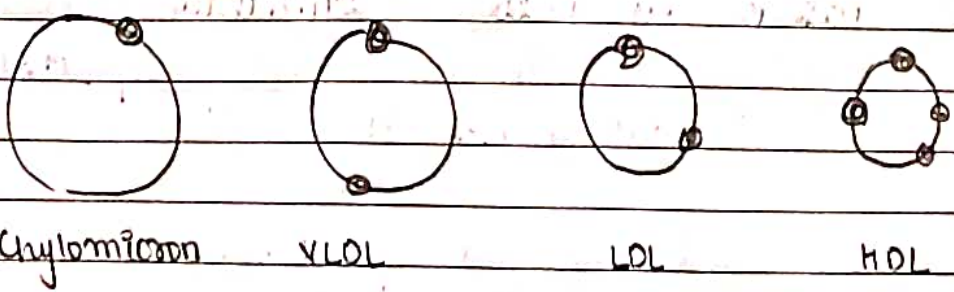


capillaries

breaks into FFA + glycerol



⇒ (Cholesterol +) lipids + proteins → lipoproteins



⇒ proteins (apoproteins)

LDL from liver to tissues

Lipids → cholesterol
→ triglycerides

⇒ HDL from liver to tissues

Dietary

cholesterol packed into chylomicron, absorbed into Intestine and absorbed carried through blood circulation to Liver

Liver → packages

Dietary + endogenous cholesterol + triglycerides (produced by its own)

into VLDL

VLDL travels into blood stream to other organs.

During circulation muscles and tissue (adipose) extract triglycerides from the VLDL

turning it into LDL

LDL is taken up by peripheral cells by endocytosis through LDL receptor.

Cholesterol is used for functions

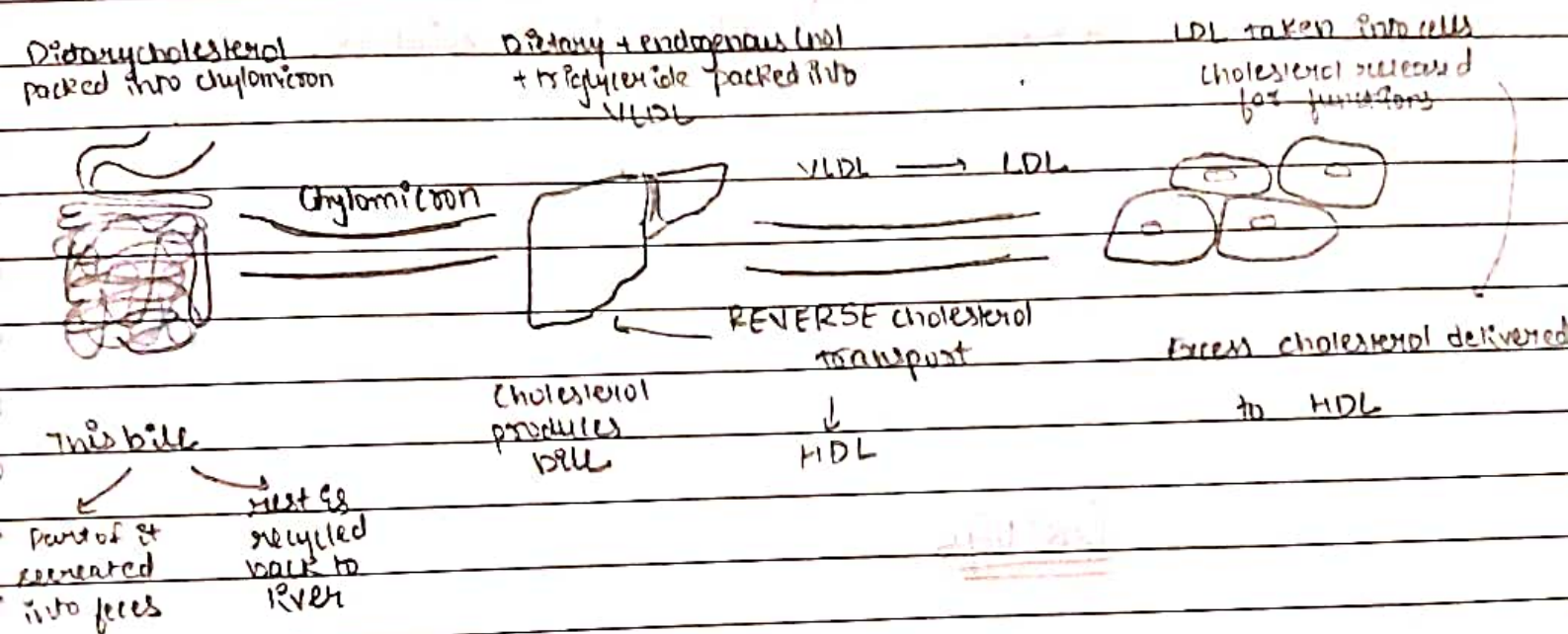
Excess cholesterol is expelled from cells and delivered to HDL

HDL travels back to LIVER

LIVER uses cholesterol to produce BILE

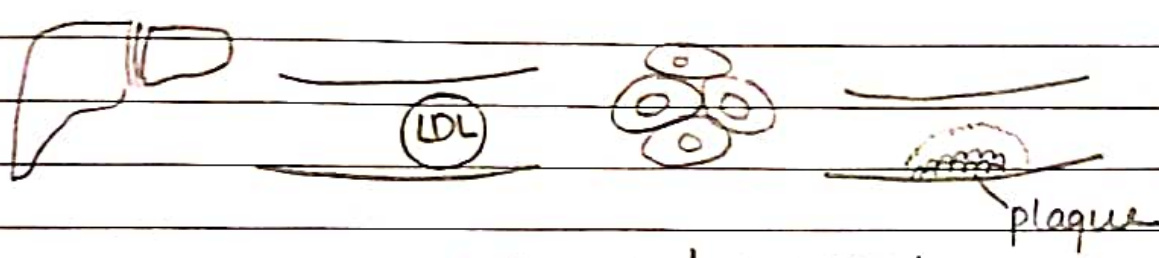
Bile is secreted to intestine where it is break down fats

Part of bile is excreted in feces and other is recycled to Liver.



LDL has the highest cholesterol concentration and it is the major carrier of chole.

High levels of cholesterol in blood is associated with cholesterol plaque built up and CVS diseases like MI & stroke.



LDL = bad cholesterol

DRUGS

