Hyperlipidemic causes

Most common

- individual lifestyle
  - lack exercise
  - High consumption of fatty acid
- Single inherited gene defect in lipoprotein Metabolism
- Combination
  - genetic + life style

* incidence of Heart failure *

- increase ↑
  - LDL
  - triglyceride
- low level ↓
  - HDL

* Anti Hyperlipidimic Drugs *

May used as single or combination

→ taken forever

* target the problem with complimentary strategies *

- ↓ production of lipoprotein carriers of cholesterol & triglyceride
- ↑ Degradation of lipoproteins
- ↓ cholesterol absorption or Direct ↑ of cholesterol removal from the body

* Statins *

- Ceriva
- 60mg Lova
- 50mg Prava
- 40mg Simva
- 30mg Fluva
- 20mg Atorva ← give 40mg
- 10mg Rosuva ⟸ Most potent (Lowest Dose) *with same Effect

متى الفعل؟ هاد بس مثال

agressive treatment ⟸ (give Higher Dose) Ex: give 20

give to:

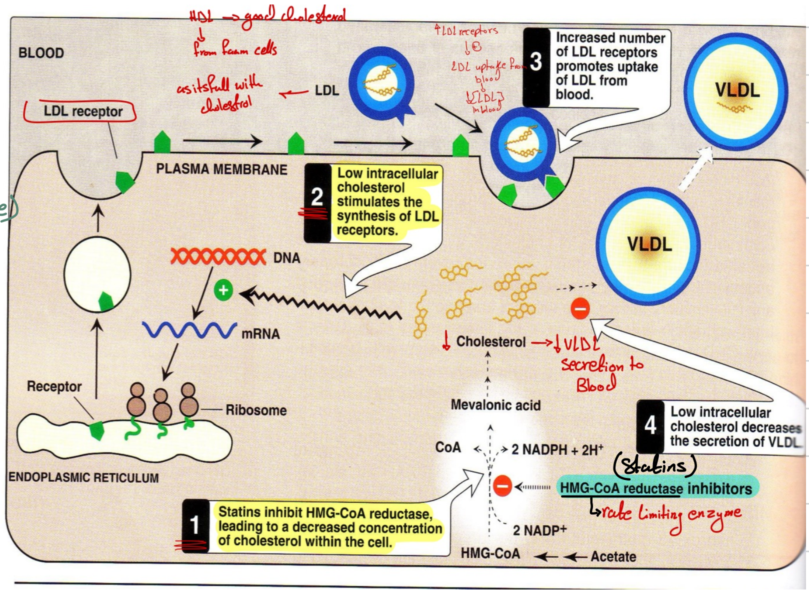
- Type IIa	Familial hypercholesterolemia	Elevated LDL only
• Type IIb (LDL) (VLDL)	Combined hyperlipidemia	Elevated LDL and VLDL and Triglycerides

Most common in Jordan — Statin & fibrates

in combination to Deal with High LDL

+ Statin

MoA



* Statins ⊖→ HMG-CoA reductase —✗→ cholesterol synthesis
⇓
↓ intracellular cholesterol
→ ↓VLDL secretion into Blood ⟸ (triglycerols) ⟸ ↓↓ VLDL
→ ∴ foam cells will ↑HDL ⟸ slight ↑ ⟸ ↑↑ HDL
↓⊕ Synthesis of LDL receptors → ↑ intake of LDL from Blood → ↓[LDL] in Blood
Mainly
Highly Decreased
↓↓↓↓[LDL]

* Contraindication *

- pregnancy
- Nursing Mothers مرضع
- children
- teenagers

* SE *

Liver

Biochemical Abnormalities in liver function

* Must evaluate Lever Function *

Muscles

Myopathy (الأكثر شيوعاً)

* give More potent Drug to ↓ Myopathy SE
↓
Rosuvastatin > Atorvastatin (potent)

rhabdo-myolysis (شائع جداً) — Very rare

(in very rare cases) ← stuped Doctor or pt randomly increasing the Dose

(in very severe cases)

Kidney

Extrem rare

Renal Failure ← will Cause then ← rhabdo-myolysis

Hyperlipoproteinemia

Most common in Jordan — Type IIb — Statin & Fibrates (LDL) (VLDL)	Combined hyperlipidemia	Elevated LDL and VLDL and Triglycerides
obese pts, thin but have genetic — Type IV — Fibrates	Familial Hyperlipemia	Increased VLDL

* Niacin (vitamin B3) *

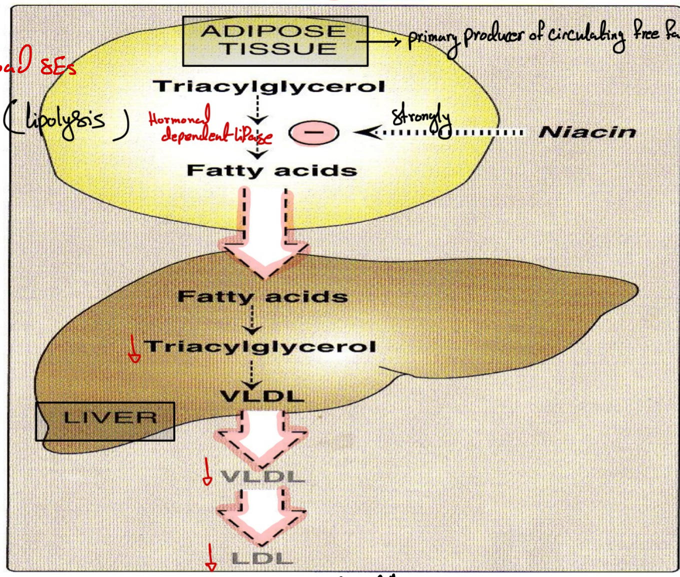
* SE * → Note: as its a vitamin ∴ will have broad SEs

↑ utilization of Arachedonic Acid → prostaglandin

- ↑ BV permiability ⇓
- ⊕ Histamin release ⇓

- ↑ liver Enzymes
- - GI irritation
  - Nausea
  - Vomiting
  - peptic ulcer ⊕
- Cutaneous flushing
- Burning & itching
- Hyperuricemia ⇓ as it prevent uric Acid secretion ⇓ ∴ Contraindicated in gout pts
- Hyperglycemia as it prevent insulin secretion from Langerhans cells

* MOA *



ADIPOSE TISSUE → primary producer of circulating free fatty acid

(lipolysis) Hormone dependent lipase ⊖ ← strongly — Niacin

(in Adipose tissue)

* Niacin —strongly ⊖→ lipolysis → ∴ ↓ FFA
  - ↑↑↑↑ HDL — Mostly
  - ↓ triacylglycerol (in VLDL) &
  - ↓ cholesterol (in VLDL & LDL) — VLDL ↓↓↓, LDL ↓↓
  - Can be used to treat Hypercholestrolemias

Type I (Fibrates)	Familial hyperchylomicronemia	Elevated Chylomicrons and VLDL
Type IIb (Statin & fibrates) (LDL) (VLDL)	Combined hyperlipidemia	Elevated LDL and VLDL and Triglycerides
Type IV (Fibrates)	Familial Hyperlipemia	Increased VLDL
Type V	Endogenous Hypertriglyceridemia	Increased VLDL and Chylomicrons

* Fibrates *

Feno + fibrate
Beza
Gemfibrozil

→ Derivatives of fibric acid

* in treatment of
Hypertriglycerolemias

* MoA *

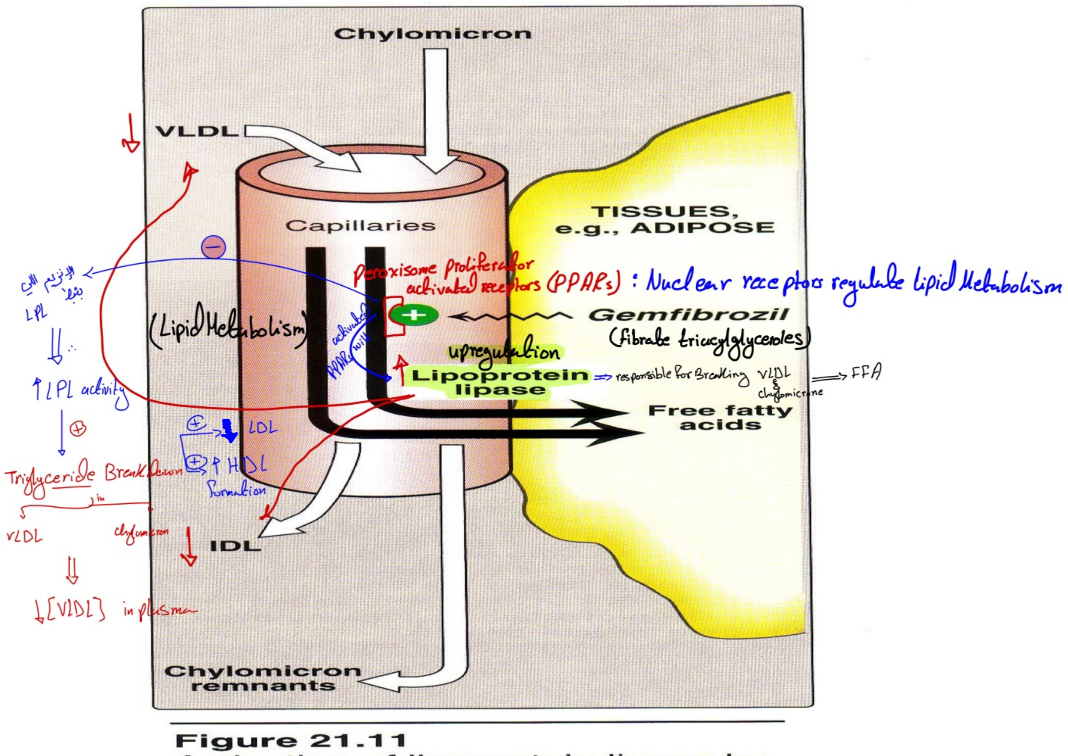


Figure 21.11

* Fibrates —Bind to→ PPARs
⇓
↑ expression of lipoprotien lipase → ↓↓ LDL
→ ↑↑↑ HDL

↓ [VLDL] ≈ ↓↓↓↓ [triglyceride] ⇐ Due to ↑ utilization toward adipose

* SE *

- Most common: Mild GI disturbances
- Most important: Lithiasis
  - Fibrates ↑ Bilary cholesterol excretion ⇓ ∴ predisposition to formation of gallstones (gallbladder stones)
- Myositis
  - * infl. of voluntary Muscle *

Fenofibrate vs Gemfibrozil

Fenofibrate	vs	gemfibrozile
Can combine with statin in one condition ⇓ (Not at same time)		inhibit cyt P450 ↓ imp for statin Metabolism ∴ if inhibited → statin will accumulate ∴ Contraindication to combine with statin

Statin (night) — Fenofibrate ⇓ During Day

* Fibrates compete with the coumarin anticoagulants for Binding sites on plasma proteins

TYPE OF DRUG	EFFECT ON LDL	EFFECT ON HDL	EFFECT ON TRIACYLGLYCEROLS
HMG-CoA reducatase inhibitors (statins)	↓↓↓↓	↑↑	↓↓
Fibrates	↓	↑↑↑	↓↓↓↓
Niacin	↓↓	↑↑↑↑	↓↓
Bile acid sequestrants	↓↓↓	↑	Minimal
Cholesterol absorption inhibitor	↓	↑	↓

Figure 21.14
Characteristics of hyperlipidemic drug families. HDL = high-density lipoprotein; HMG-CoA = 3-hydroxy-3-methylglutaryl–coenzyme A; LDL = low-density lipoprotein.