Haemochromatosis

- Increased amount of total body Iron

Normal

Diet → Absorbed (1-2 mg/day) ← Lost → 1 mg/day (GIT, sweat, Urine)

10-20 mg/day

Gain = lost

In Haemochromatosis → 4 mg/day absorbed.

So +3 mg/day, → 1 g/year, → 20 g at age of 40 years.

Causes

1) Primary Haemochromatosis (Hereditary)
   - Gene mutation (C282Y or H63D mutation) in HFE (High Fe) gene of chromosome 6.

2) Secondary
   - Frequent blood transfusions
   - Iron loading anemia (Thalassemia, Sideroblastic anemia, Pyruvate Kinase)
   - Liver Disease.

Pathophysiology

Gene mutation in Enterocyte HFE gene.
↓
No regulation
↓
More iron react with Hydrogen Peroxide.
↓
Free radicals → Cellular damage → Cell death
↓
Tissue fibrosis

Complication: or Clinical Features

Liver → Fe Buildup + Free radical damage → Macronodular Cirrhosis + ↑ Cancer risk.

Pancreas → Endocrine → Type I diabetes
↘ Exocrine → Malabsorption

Skin → Brownish pigment → Bronze pigment in the sun exposed areas called Bronze diabetes

Heart → Myocardium → Cardiomyopathy → Arrhythmia

Gonads → Amenorrhea - Women
Testicular atrophy - men.
Joints → Degenerative Joint disease
Symptoms occur after 50 age in men.
10-20 yrs after menopause in women due to estrogen loss from menses.

Investigations
- Genetic Testing → C282Y and H63D mutations.
→ ↑ Serum Iron load.
→ ↑ Transferrin saturation more than 50%.
→ ↓ Transferrin
→ ↑ Ferritin (∵ DD → Still's disease, ethanol consumption).
→ ↓ Total Iron Binding Capacity.
→ Liver Biopsy → Gold standard for Cirrhosis.
→ MRI high specificity but low sensitivity.

Treatment
- Phlebotomy (Venesection)
- Treatment for Cirrhosis & Diabetes mellitus.
- Checking other members of family.

Inherited liver disease:
1) Haemochromatosis
2) Wilson's disease
3) α1-antitrypsin deficiency
4) Gilbert's syndrome