

Hypercalcemia

Definition: Above normal levels of calcium (Ca²⁺) in the blood

Risk factors & causes: Hyperparathyroidism or malignancy

Signs & symptoms:

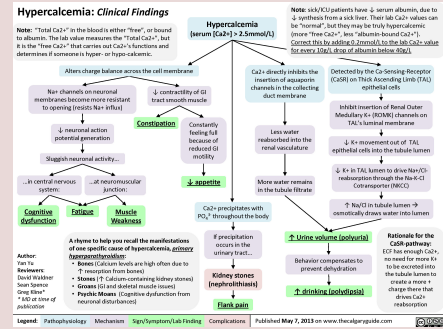
- Cognitive dysfunction
- Fatigue
- Muscle weakness
- Constipation
- Decreased appetite
- Polyuria (↑ urination)
- Polydipsia (excessive thirst)

Pathophysiology & mechanism: Changes in Ca²⁺ concentration in the blood cause alterations in the balance of electrical charges of cell membranes leading to sluggish neuronal activity → ↓ Ca²⁺ causes a ↓ in the permeability of collecting duct membrane in the nephrons → ↓ Ca²⁺ leads to increase in Na/Cl into tubule lumen (nephrons) with osmotic effects → leads to less water reabsorbed into the blood; & more water eliminated in the urine

Complications: Ca deposition in different parts of the body causing stones (urolithiasis), flank pain (not specific)

Treatment: Medication & surgery

Hypercalcemia (contnd)



Osteoporosis

Definition: Imbalance of bones formation & reabsorption leading to brittle bones

Risk factors & causes:

- Females more likely
- Age
- White or Asian
- FHx
- Small body frames

Pathophysiology & mechanism: In osteoporosis imbalance in bone reabsorption vs bone formation leading to a ↓ in bone density & bone mass → ↓ serum concentrations of vitamin D lead to a decrease in Ca²⁺ available for the mineralisation of bone

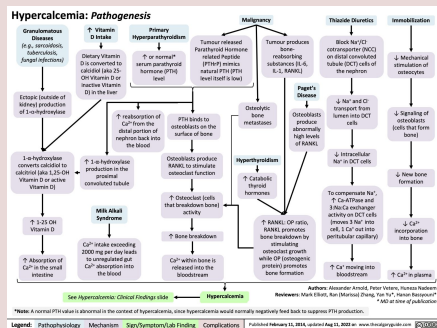
Signs & symptoms:

- Pain (from fractures & other conditions associated with osteoporosis)
- Postural changes
- Fractures
- Loss of height

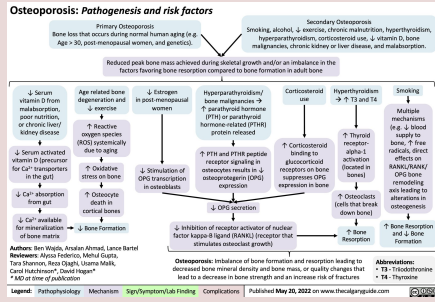
Complications: Bone fractures (mainly spine & hips)

Treatment: Prevention - Supplements & weight bearing exercise

Hypercalcemia



Osteoporosis



Hypothyroidism

Definition: Thyroid gland doesn't produce enough thyroid hormone (underactive thyroid)

Risk factors & causes:

- Autoimmune disease
- Thyroid surgery
- Radiation therapy
- Thyroiditis
- Medicine (e.g. lithium used to treat severe depression)
- Pituitary disorder (insufficient produce of thyroid-stimulating hormone)
- Women, FHx, Type 1 diabetes

Pathophysiology & mechanism: Impaired function of the gland & a ↓ in the secretion of thyroid hormones T3 & T4 → engages number of mechanisms (circled in red)

Signs & symptoms:

- Thinning/losing hair
- Eyebrow hair loss
- Puffy face
- Enlarged thyroid
- Dry & coarse skin
- Slow heartbeat
- Poor appetite
- Constipation
- Infertility / heavy menstruation
- Cool extremities & swelling of the limbs
- Carpal tunnel syndrome
- Weight gain
- Poor memory
- Fatigue

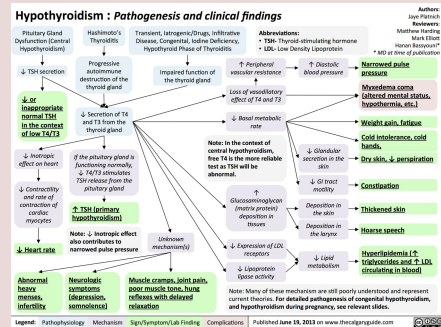
Hypothyroidism (cont)

Complications:

- Goiter
- Cardiac problems
- Peripheral neuropathy
- Infertility
- Birth defects

Treatment: Medication

Hypothyroidism



Hypocalcemia

Definition: Low Ca²⁺ levels in the blood serum

Risk factors & causes:

- Hypoparathyroidism
- Vitamin D inadequacy or resistance
- Renal disease
- Terminal liver disease with vitamin D inadequacy

Pathophysiology & mechanism: Ca²⁺ changes lead to a change in cell membrane polarisation → ↓ in the threshold for cell depolarisation causing an increase in neuronal excitability → Sx & SSx

Signs & symptoms:

- Paraesthesia (burning/prickling sensation)
- Numbness
- Chvostek's sign (twitching facial muscles)
- Trousseau's sign (hand & wrist twitching)



By **bee.f** (bee.f)
cheatography.com/bee-f/

Published 25th May, 2023.
Last updated 1st November, 2023.
Page 2 of 4.

Sponsored by **Readable.com**
Measure your website readability!
<https://readable.com>

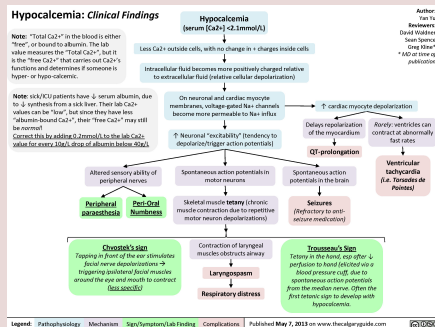
Hypocalcemia (cont)

Complications:

- Ventricular tachycardia
- Seizures
- Respiratory disease

Treatment: Iv infusion & medication

Hypocalcemia



Diabetes mellitus

Definition: Body can't produce enough insulin (high blood sugar levels)

Risk factors & causes: Unhealthy lifestyle → intraperitoneal cavity accumulates visceral fat (endocrine organ that secretes 'bad' hormones)

Pathophysiology & mechanism: Manifested by a state of resistance to the effects of insulin, consequently →

- various organs are less able to use glucose as a source of energy
- There's hyperglycaemia leading to glucotoxicity, i.e. damage to pancreatic cell that produce insulin
- Deficient insulin causes diabetes

Diabetes mellitus (cont)

Signs & symptoms: Depend on the specific body system affected

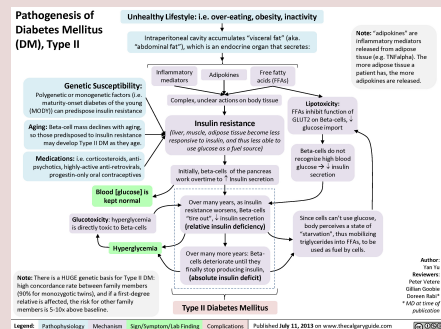
- Frequent urination
- Excessive thirst
- Unexplained weight loss
- Extreme hunger
- Sudden vision changes
- Tingling or numbness in the hands or feet
- Feeling very tired much of the time
- Very dry skin

Complications:

- Cardiovascular disease
- Nerve damage
- Kidney damage
- Eye damage
- Foot damage
- Skin & mouth conditions
- Hearing impairment

Treatment: Prevention - Healthy diet & exercise

Diabetes mellitus



Hyperthyroidism

Definition: Thyroid creates excessive thyroid hormones → speeding up the body's metabolism

Risk factors & causes:

- Graves' diseases (attacks thyroid)
- Overactive thyroid nodules (toxic adenoma)
- Thyroiditis (inflamed thyroid)
- FHx
- Recent pregnancy



