

THYROID + PARATHYROID

ENDOCRINE

→ release hormones into the blood

• Pancreas secretes insulin + glucagon directly into bloodstream

EXOCRINE

→ secrete their substances out through ducts

Ex: digestive glands

TARGET CELLS

Thyroid: hormones that act on body cells to regulate metabolism

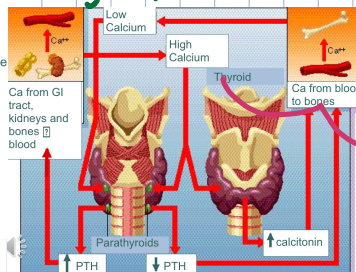
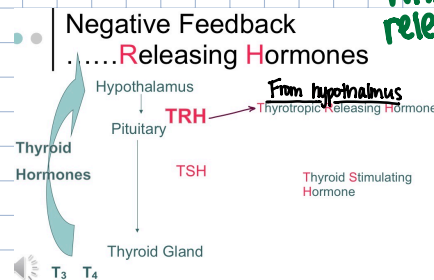
Parathyroid: hormones that act on bones, kidneys, & GI tract to regulate metabolism

DISORDERS of THYROID + PARATHYROID

Thyroid fx is checked @ birth

NEGATIVE feedback

- When $T_3 + T_4$ levels drop,
- hypothalamus is signaled to release TRH which stimulates the Pituitary to release TSH which stimulates Thyroid to release $T_3 + T_4$



THYROID HORMONES

1. T_3

2. T_4

3. CALCITONIN

ZOOM IN

moves Calcium from blood

→ LOW $T_3 + T_4$ AND HIGH TSH

HASHIMOTO'S THYROIDITIS

Most Common Etiology for

- Thyroid can't produce the pituitary gland calls for

Immune reaction

- Self antibodies against $T_3 + T_4$

Resulting in Apoptosis of $T_3 + T_4$ Cells

@ Risk :

1. Middle aged women

↳ even higher risk if FH

SLOW ONSET

SYMPTOMS

1. intolerance to cold
2. Weight gain
3. Low energy levels
4. Constipation
5. dry skin
6. Hair loss
7. Slow cognition

PHYSICAL EXAM

- Enlarged Thyroid Gland

- GOITER

- produced when pituitary tries to produce more TSH, making hyperplasia take place & a goiter forms on the thyroid because it responds to the TSH

HYPERTHYROIDISM

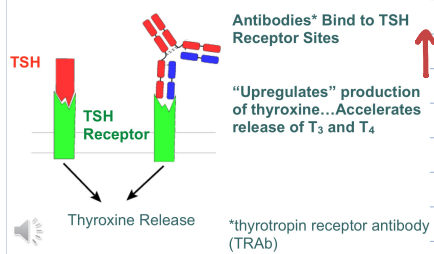
ETIOLOGY: over-treatment of hypothyroidism

GRAVES DISEASE

- immune etiology for hyperthyroidism

ANTIBODIES bind to receptor sites → upregulates production of $T_3 + T_4$

Immune Response



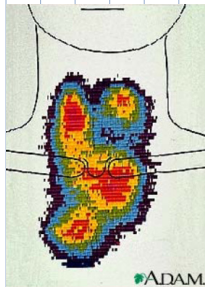
↑ $T_3 + T_4$ & ↓ TSH

SYMPTOMS

1. Weight loss
2. hungry
3. Restless
4. intolerant to heat

↳ due to the hypermetabolism

IODINE SCAN



Radioactive Iodine Uptake Scan

increased uptake

...remember, gland is hyperactive

4. the body creating so much internal heat

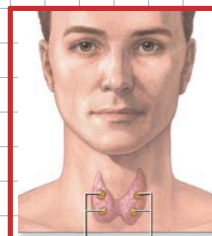
5. diarrhea / GI hyperactivity

PHYSICAL EXAM

1. Tachycardia
• palpitations

2. Goiter 3. Exophthalmus
- bulgy eyes

Also can do: Surgery to remove thyroid
+ Antithyroid medication



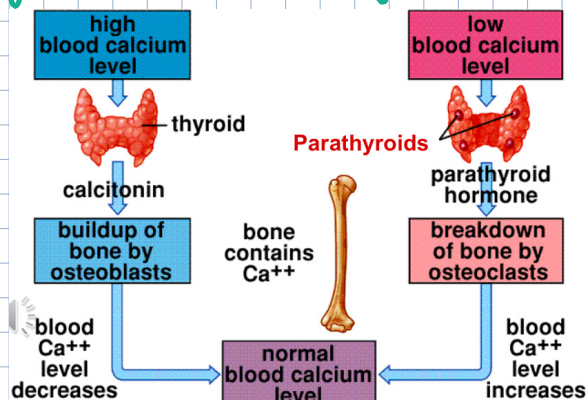
Parathyroids sit posterior to thyroid..4 total...two on back of each lobe of thyroid

Parathyroid Glands

PARATHYROID DISORDERS

regulation of Calcium: Thyroid + Parathyroids

Parathyroid hormone + vitamin D are needed for Calcium absorption



HYPERPARATHYROID

Symptoms

1. ↑ PTH levels
2. ↑ calcium absorption from GI
3. ↑ Osteoclast activity
4. ↑ serum calcium levels

hyperparathyroid can also cause Kidney Stones (nephrolithiasis) because?

- increased Calcium passing through glomeruli and tubules

hyperparathyroid can also cause

HYPERPARATHYROID

• results from hyperplasia

fractures because?
 - ↑ PTH = increased osteoclast activity
 = Calcium moving out of bones and into the blood

or tumor of the PTH gland

VS

SECONDARY
 HYPERPARATHYROID
 - results from hypocalcemia

HYPOPARATHYROIDISM

↓ PTH and ↓ Serum Calcium

After Surgery: Surgical trauma can lead to temporary edema w/ reduce blood flow to the glands and reduce the ability of parathyroid gland to respond to PTH.
 This can be treated w/ Supplemental Calcium

RANK IN ORDER REVIEW

Hashimoto's: Put the Following in Order Grave's Disease: Put the following steps in order

- Genetic susceptibility + trigger 1
- Decreased T3 8
- Palpitations, trouble sleeping, heat intolerance 6
- Apoptosis 7
- Autoantibodies 3
- Thyrocytes change their "look" 2
- Inflammation 4
- Increased T3 5
- Fatigue, weight gain, cold intolerance 9

- Genetic susceptibility + trigger 1
- Increase T3 3
- Autoantibodies...antibodies occupy the TSH receptor sites 2
- TSH falls in an attempt to slow production of thyroid hormones 5
- Palpitations, restlessness, intolerance to heat 4

