

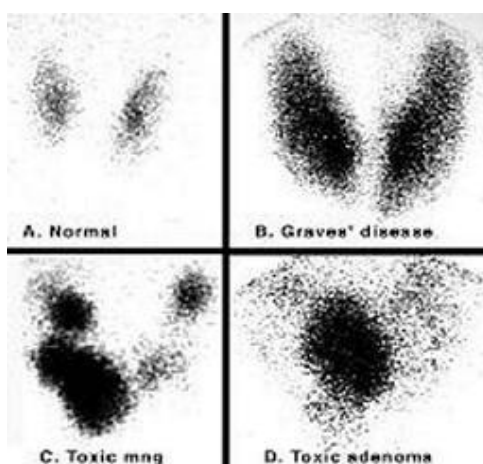
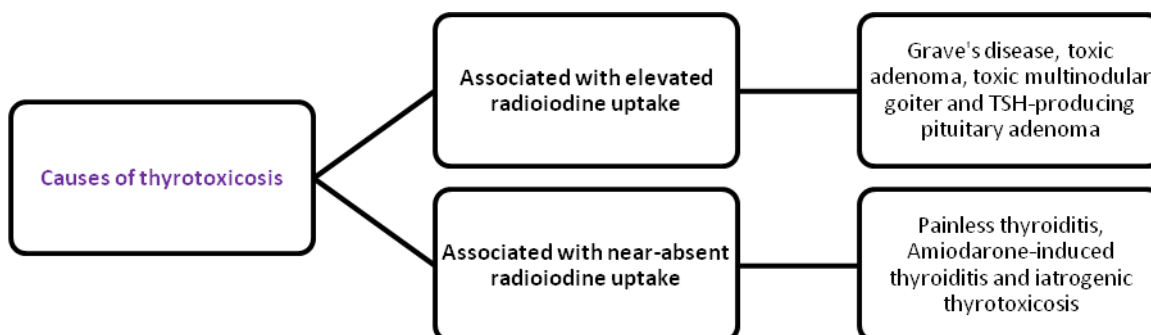


- **Regulation of thyroid hormone synthesis:**

- Hypothalamus produces thyroid releasing hormone (TRH) which stimulates anterior pituitary gland to produce thyroid stimulating hormone (TSH) which will bind to its receptors expressed on the surface of thyroid gland and mediate the synthesis of thyroid hormones (T3,T4). Thyroid hormones will express a negative feedback on both hypothalamus and anterior pituitary gland.

- **What is the difference between hyperthyroidism and thyrotoxicosis?**

- **Hypethyroidism:** increased synthesis and secretion of thyroid hormones by the thyroid gland.
- **Thyrotoxicosis:** clinical state resulting from high thyroid hormone action in tissues.



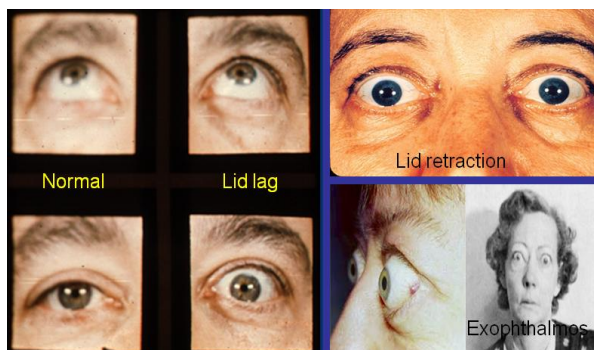
- **Grave's disease:**

- Autoimmune disease caused by autoantibodies (TSIs) which act as a positive feedback stimulating thyroid gland to produce more thyroid hormones (it will also hypertrophy resulting in goiter).

- More common in females.

• **Clinical features include:**

- ✓ Heat intolerance.
- ✓ Exophthalmos, lid retraction and lid lag.
- ✓ Tachycardia.
- ✓ Weight loss.
- ✓ Fine tremor.
- ✓ Diarrhea.
- ✓ Peritibial myxedema.





- **Classification of Grave's eye disease (NO SPECS):**
  - ✓ Grade 0: No signs or symptoms
  - ✓ Grade 1: Only signs but no symptoms.
  - ✓ Grade 2: Soft tissue involvement.
  - ✓ Grade 3: Proptosis
  - ✓ Grade 4: Extraocular muscle involvement.
  - ✓ Grade 5: Corneal involvement.
  - ✓ Grade 6: Sight loss (due to optic nerve involvement).
- **Laboratory investigations:**
  - ✓ TSH, FT4 and FT3
  - ✓ TSH-receptor antibodies (TRAB) and TSI
  - ✓ Radioactive iodine scan.
  - ✓ Thyroid ultrasound (if radioactive iodine scan is contraindicated).
- **Management:**
  - ✓ Anti-thyroid drugs (more details are provided in pharmacology note).
  - ✓ Radioactive iodine therapy: usually preferred in females planning for pregnancy, individuals with diseases increasing surgical risks and when the use of antithyroid drugs is contraindicated.
  - ✓ Surgery: mainly when thyroid malignancy is documented or suspected.

- **Thyroid storm:**

- **It is an acute life-threatening exacerbation of all the symptoms and signs of thyrotoxicosis.**
- **Caused by acute events such as:**
  - ✓ Trauma.
  - ✓ Infection.
  - ✓ Thyroid or non-thyroid surgery.
- **Symptoms of thyroid storm include the following:**
  - ✓ Hyperpyrexia.
  - ✓ Flushing and sweating.
  - ✓ Tachycardia (with the risk for atrial fibrillation and heart failure).
  - ✓ Agitation and restlessness.
  - ✓ Delirium and coma.
  - ✓ Nausea and vomiting.
  - ✓ Diarrhea.
  - ✓ Jaundice.
  - ✓ Shock.

The following table summarizes test results and their potential meaning.

TSH	T4	T3	Interpretation
High	Normal	Normal	Mild (subclinical) hypothyroidism
High	Low	Low or normal	Hypothyroidism
Low	Normal	Normal	Mild (subclinical) hyperthyroidism
Low	High or normal	High or normal	Hyperthyroidism
Low	Low or normal	Low or normal	Non-thyroidal illness (secondary hypothyroidism); look for pituitary failure