ENDOCRINE

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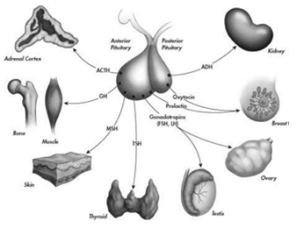
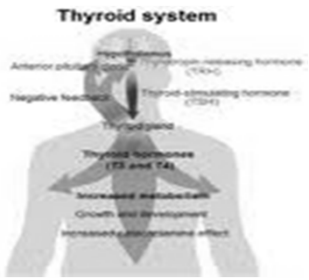




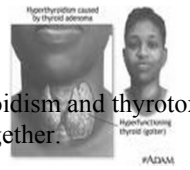
HYPERTHYROIDISM

A clinical syndrome in which there is an increase in the synthesis and release of thyroid hormone.

A hypermetabolic condition characterized by excessive amounts of thyroid hormone in the blood stream.

THYROTOXICOSIS

The physiologic effects or clinical syndrome of hypermetabolism that result from excess circulating levels of T4 and T3.



Hyperthyroidism and thyrotoxicosis usually occur together.

GRAVES DISEASE

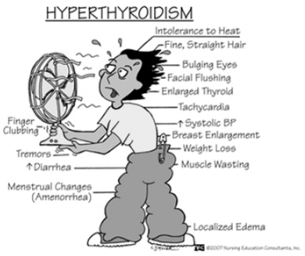
- Autoimmune disease of unknown etiology marked by diffused thyroid enlargement and excessive thyroid hormone secretion.
- Patients develop antibodies to the TSH receptor.The antibodies attach to the receptor and stimulate the thyroid gland to release T3 and T4.

Precipitating Factors

- Stress
- Infection
- Emotional crisis
- Insufficient iodine supply

CLINICAL MANIFESTATIONS

- ↑HR, BP,CO,RR
- Murmurs, Dysrhythmias
- Angina, A-fib
- ↑Appetite, thirst
- ↑Peristalsis, diarrhea
- Warm, moist skin
- Thin, brittle nails
- Fine hair, hair loss
- Fatigue, muscle waekness
- Nervousness, tremors insomnia
- Hyperreflexia
- Menstrual irregularities
- Heat intolerance

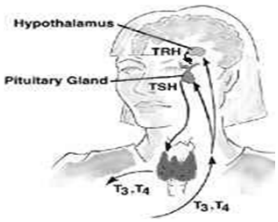


CLINICAL MANIFESTATIONS

- Goiter
- Exophthalmos
- Lid lag, stare
- Eyelid retraction
- Difficulty focusing eyes
- Dependant edema
- Osteoporosis

DIAGNOSTIC STUDIES

- ↓ TSH
- ↑T4, T3
- Radio active iodine (RAIU)
- Thyroid peroxidase (TPO) antibody



TREATMENT

- The over all goal is to block the adverse effects of thyroid hormone and stop their oversecretion
- Antithyroid medications
- Radioactive iodine therapy
- Surgery (subtotal thyroidectomy)

DRUG THERAPY

- **Iodine**
- **Antithyroid drugs**
  1. Methimazole (Tapazole)
  2. Propylthiouracil (PTU)
- **Beta Adrenergic Blockers**
  1. Propranolol (Inderal)
  2. Atenolol (Tenormin)

RADIOACTIVE IODINE THERAPY

- RAI damages or destroys thyroid tissue, thus limiting thyroid hormone secretion.
- RAI maximum effect 2-3 months
- Usually treat patients with other antithyroid drugs until effects of RAI become apparent.
- There is a high incident of posttreatment *hypothyroidism*.

NUTRITIONAL THERAPY

- 4000-5000 kcal/day
- Protein 1-2 g/kg
- Vitamins A, B, C
- Avoid highly seasoned foods. High fiber
- Avoid caffeine

SURGICAL THERAPY

- ***Thyroidectomy***
- ***Subtotal thyroidectomy***

  90% of the thyroid tissue is removed.

  If to much tissue is removed, the gland will not regenerate after surgery and hypothyroidism will result.

SURGICAL PREPARATION

- Iodine therapy
- Preoperative teaching
- ROM
- Emergency equipment
- Positioning
- Monitoring patients for hypocalcemia

  (***Trousseaau's sign, Chvostek's sign)***

POST OPERATIVE COMPLICATIONS

- Hypothyroidism
- Damage or removal of the parathyroid gland
- Hypoparathyroidism
- Hypocalcemia
- Injury to the laryngeal nerve, vocal cord paralysis
- Thyrotoxic crisis
- Infection

POSTOPERATIVE COMPLICATIONS

- Hemorrhage
- Hematoma
- Laryngeal stridor
- Tetany

POSTOPERATIVE CARE

- Relative hypothyrodism
- Dietary Restrictions
- Exercise
- Avoid high temperatures
- Radioactive iodine (RAI)

ACUTE THYROTOXICOSIS ***THYROID STORM***

- An acute condition in which all hyperthyroid manifestations are heightened.
- A life threatening emergency, death is rare when treatment is vigorous and initiated early.
- Heart and nerve tissue becomes more sensitive to catecholamines due to more binding sites for epinephrine and norepinephrine.

MANIFESTATIONS OF THYROID STORM

- Severe tachycardia
- Heart failure
- Shock
- Hyperthermia
- Restless, agitation, seizures
- Abdominal pain, nausea, vomiting, diarrhea
- Delirium, coma

TREATMENT OF THYROID STORM (***Thyrotoxicosis)***

- Medications
- Oxygenation
- Monitor for cardiac dysrhythmias
- Environment
- Exercise
- Eye care

HYPOTHYROIDISM

Insufficient circulating thyroid hormone.

Primary: Related to the destruction of the thyroid tissue or defective hormone synthesis.

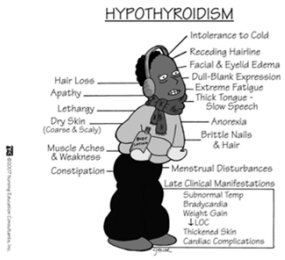
Secondary: Related to pituitary disease with decreased TSH secretion or hypothalamic dysfunction with ↓ TRH

ETIOLOGY

- Drugs
- Autoimmune
- Iodine deficiency
- Atrophy of the thyroid gland
- Treatment of hyperthyroidism
- Surgical removal of the thyroid gland
- Radioactive Iodine Therapy
- Thyroid hormone deficiency in infancy (*Cretinism*)

CLINICAL MANIFESTATIONS

- Fatigue, lethargic
- Impaired memory
- Slowed speech
- ↓Cardiac contractility
- ↓ CO, heart sounds
- Anemia
- Atherosclerosis
- ↓GI motility,↓ HCL acid
- Constipation
- Cold intolerance
- Hair loss, brittle nails
- Dry coarse skin
- Muscle weakness
- Weight gain
- Prolonged menstrual periods, amenorrhea
- Increased susceptibility to infections
- Enlarged scaly tongue



DIAGNOSTIC STUDIES

- ↓T3, T4
- ↑TSH
- ↑serum cholesterol, ↑triglycerides
- ↑creatine kinase
- ↓Hgb, HCT
- ECG: Sinus bradycardia, low voltage QRS, flat or inverted T wave

TREATMENT

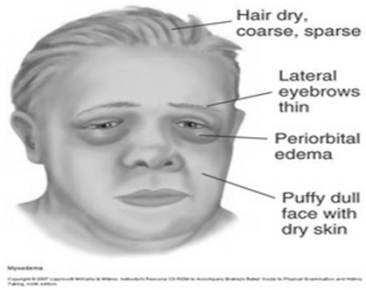
- Diet: Low calorie, ↑fiber
- Hormone Replacement
  1. Levothyroxine (SYNTHROID)
  2. Liotrix

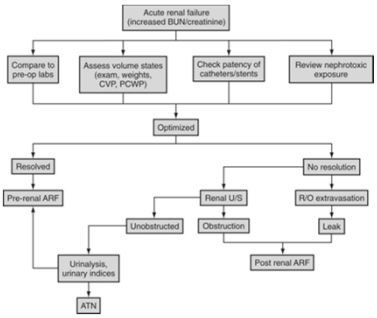
CARDIAC MANAGEMENT

- Patients with hypothyroidism for a long period of time is likely to have coronary-related diseases.
- Elevated serum cholesterol, atherosclerosis, and CAD
- As long as metabolism is subnormal and the myocardium requires relatively little oxygen a reduced blood supply is tolerated without symptoms of CAD

MYXEDEMA

- The accumulation of hydrophilic mucopolysaccharides in the dermis and other tissues.
- The mucinous edema causes the characteristic facies of hypothyroidism


Hair dry, coarse, sparse
Lateral eyebrows thin
Periorbital edema
Puffy dull face with dry skin
Myxedema


Acute renal failure (increased BUN/creatinine)
Compare to pre-op labs
Assess volume states (exam, weights, CVP, PCWP)
Check patency of catheters/stents
Review nephrotoxic exposure
Optimized
Resolved
No resolution
Pre-renal ARF
Renal U/S
R/O extravasation
Unobstructed
Obstruction
Leak
Urinalysis, urinary indices
Post renal ARF
ATN

TREATMENT OF MYXEDEMA COMA

- IV Drug Therapy
- Sodium Replacement
- Monitor core temperatures
- Vital signs
- Body weight
- I&O
- ECG monitoring

PATIENT EDUCATION

Life long therapy
Signs and symptoms
Toxic symptoms
Glucose testing for the diabetic
Signs an symptoms of a drug overdose
Drug interactions

QUESTION

A client reports weight gain and tiredness. Labs: ↑TSH, ↓T3 and T4. The nurse knows these symptoms are associated with:

a. tetany
b. hypothyroidism
c. hyperthyroidism
d. hypokelemia

QUESTION

The nurse should anticipate administration of which medication to a client with hypothyroidism?

a. Dexamethasone
b. Lactulose
c. Levothyroxine
d. Lidocaine

QUESTION

Which of the following findings would indicate a potentially serous complication in a client with hypothyroidism?

a. Chills, fever, and hypotension
b. Palpitations and chest pain
c. Decreased visual acuity
d. Low platelet counts

QUESTION

A client presents with weight gain, intolerance to cold, constipation, and lethargy. Which test should the nurse expect to ordered?

a. Liver function test
b. Hemoglobin A1C
c. T4 and TSH
d. 24-hour free cortisol measurement

QUESTION

A client with hyperthyroidism may present with which symptoms?

a. Polyuria, polydipsia, and weight loss
b. Heat intolerance, nervousness, weight loss
c. Coarsening of facial features and extremity enlargement
d. Tiredness, cold intolerance, weight gain

QUESTION

Understanding the need to decrease the size and vascularity of the thyroid gland before surgery, which medication can the nurse expect to be ordered?

a. Pitressin
b. Propythiouracil
c. Potassium iodine
d. Potassium permanganate

QUESTION

- A hyperthyroid client with sleep disturbance could be aided by:

a. Restricting fluid intake
b. Administering liotrix (Thyrolar)
c. Using a private room
d. Providing a warm environment