

# Thyroid Disorders and Anesthesia

# Hyperthyroidism

- Increased circulating concentrations (5-15x) of triiodothyronine ( $T_3$ ), thyroxine ( $T_4$ ), or both.
- Sx:
  - Anxiety
  - Fatigue
  - Muscle weakness
  - Tachycardia / Tachydysrhythmias
  - Exophthalmos
- Graves' Dz (diffuse toxic goiter) is most common form
  - Women 20-40 y/o
  - Autoimmune pathogenesis
  - Circulating Ab that mimic the effects of TSH

# Hyperthyroidism & Anesthesia

- Medical R<sub>x</sub>
  1.  $\beta$ -blockers
    - selective  $\beta_1$  antagonists – propranolol, atenolol, metoprolol
  2. Anti-thyroid meds (PTU, methimazole)
  3. Iodides
- Pre-Op sedation
- MAC is NOT increased (CO is increased)
- Difficult Airway caution related to neck masses

# Thyroid Storm

- **Thyrotoxicosis** – abrupt hyperthyroidism exacerbation resulting from sudden excessive  $T_3$  &  $T_4$  release
- Symptoms: hyperthermia, tachycardia, CHF, dehydration, shock
- Onset: ? Inter-Op, more likely 6-18 hrs Post-Op
- Peri-Op onset mimics MH or Pheochromocytoma
- Mortality: 10-75%
- Tx: supportive care (crystalloid infusion & Esmolol gtt)

# Hypothyroidism

- Decreased circulating concentrations of  $T_3$  &  $T_4$
- Sx:
  - Lethargy
  - Cold intolerance
  - Bradycardia
  - Decreased CO
  - Peripheral vasoconstriction
  - Hyponatremia
  - Adrenal cortex atrophy
- Hashimoto's thyroiditis – most common form
  - Progressive thyroid gland destruction

# Hypothyroidism & Anesthesia

- Pre-Op sedation
- MAC is decreased may reflect decreased  $CMRO_2$ 
  - Myocardial depression with volatile gases
- Inter-Op monitoring directed toward:
  - CHF recognition
  - Hypothermia
- Post-Op:
  - prolonged sedation
  - continued mechanical vent

# Thyroidectomy Complications

- Hypocalcemia: Incidence 3-5% due to trauma of parathyroid glands – acute hypocalcemia generally presents 24-49 hours as laryngeal stridor and airway obstruction
- Airway Obstruction
  - Hematoma: Most common cause within 24 hours
  - Stridor: Most common cause after 24 hours – secondary to hypocalcemia
- Recurrent Laryngeal Nerve Injury
- Wound infection

# Laryngeal Nerves

