Chapter 50

Pituitary and Adrenocortical Hormones
Pituitary Gland

A small, gray, rounded structure with two parts: the anterior pituitary and the posterior pituitary
Anterior Pituitary Hormones

- Follicle-stimulating hormone (FSH)
- Luteinizing hormone (LH)
- Growth hormone (GH)
- Adrenocorticotropic hormone (ACTH)
- Thyroid-stimulating hormone (TSH)
- Prolactin (not used medically)
Gonadotropins

- Influence the reproductive organs and include FSH and LH
- Include the mentropins and urofollitropin
- Menotropins—used in ovulatory failure and to induce the production of sperm
- Urofollitropin—used to induce ovulation and to stimulate multiple follicular development
Growth Hormone

- Also called somatotrophic hormone
- Secreted by the anterior pituitary
- Regulates individual growth
- Example—somatropin, Protropin
- Uses—children who fail to grow
- Adverse Reactions—failure to respond, hypothyroidism, insulin resistance
Growth Hormone

- **Indications**
  - Pediatric growth hormone deficiency
  - Pediatric non-growth hormone deficient short stature
  - Pediatric Short Stature Associated with Prader-Willi Syndrome
  - Adult GH Deficiency
Growth Hormone

- Adverse effects
  - Hyperglycemia—by reducing glucose utilization.
  - Carpal tunnel Syndrome
  - Fatality in PWS patients
Adrenocorticotropic Hormone: Corticotropin (ACTH)

- Anterior pituitary hormone
- Stimulates adrenal cortex to produce and secrete glucocorticoids
- Used to diagnosis adrenocortical function, multiple sclerosis, thyroiditis, hypercalcemia (with cancer)
Many Adverse Reactions

- Mental depression, mood swings
- Insomnia, hypertension, edema, congestive heart failure (CHF)
- Nausea, vomiting, increased appetite
- Irregular menses, petechiae, ecchymosis, decreased wound healing, weakness, osteoporosis
- Hyperglycemia, electrolyte imbalances, moon face, buffalo hump, hirsutism
Posterior Pituitary Hormones

Vasopressin and oxytocin
Vasopressin

- Examples—vasopressin, lypressin, desmopressin
- Uses—diabetes insipidus, postoperative abdominal distention, dispel gas interfering with X-rays
- Adverse Reactions—hypersensitivity reactions, tremor, sweating, vertigo, nausea, vomiting, water intoxication
Vasopressin

Cautions:

- Contraindicated in patients with hypersensitivity
- Use cautiously in patients with history of seizures, migranes, asthma, CHF, vascular disease, postoperative polyuria
- Pregnancy category B: use cautiously in pregnancy and lactation
Vasopressin

- **Actions**
  - Promotes renal conservation of water
  - Can stimulate contraction of smooth muscle
  - Vasoconstriction
Vasopressin

- Nursing care
  - Vital signs, weight, labs prior to first dose
  - VS Q4 hours during administration
  - Strict I & O
Adrenocortical Hormones

- Adrenal cortex produces 3 classes of steroid hormones
  - Glucocorticoids
  - Mineralocorticoids
  - Androgens
Glucocorticoids

- Influence immune response and anti-inflammatory response
- Regulate glucose, fat and protein metabolism
- Act by entering target cells and binding to receptors, initiating many complex reactions in the body
- Used as replacement therapy, allergic conditions, collagen diseases, shock, etc
- Excess causes Cushings syndrome
Glucocorticoids--examples

- Cortisone
- Hydrocortisone
- Prednisone
- Dexamethasone
- Prednisolone
- Triamcinolone
Glucocorticoids--Actions

- Anti-inflammatory
- Regulation of blood pressure
- Metabolism of CHO and proteins
- Fat metabolism
- Interference with immune response
- Protection during stress
- CNS actions
Select Adverse Reactions

- Many adverse reactions may occur
- Hyperglycemia
- Signs and symptoms of Cushing’s syndrome
- Hypertension
- Osteoporosis
Glucocorticoids

- Long term therapy may lead to decreased resistance to infection
- Diabetic patients may require adjustments to medication
- Therapy must never be discontinued suddenly
- Monitor for fluid/electrolyte balance
- May cause GI disturbances
Mineralocorticoids

- Aldosterone and desoxycorticosterone
- Act to conserve sodium and increase potassium excretion
- Deficiencies result in a loss of sodium and retention of potassium
- Used a replacement therapy for deficiency
Mineralocorticoids

- Fludrocortisone (Florinef)
- Used for replacement therapy
- Both glucocorticoid and mineralocorticoid activity
- Used only for its mineralocorticoid effects
Mineralocorticoids

Adverse Reactions

- Edema, hypertension, CHF, enlargement of the heart, increased sweating, allergic skin rash, hypokalemia, muscular weakness, headache, hypersensitivity reactions
Mineralocorticoids

- **Aldosterone**
  - Acts on kidneys to promote Na+ and water retention, K+ and H excretion
  - Acts directly on the heart and blood vessels
  - Can cause harm if levels are too high