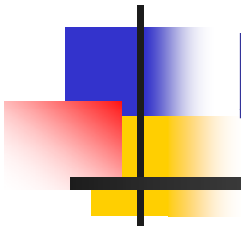


Endocrine Disorders

Williams & Hopper

Chapter 37

Pituitary Disorders(posterior)
ADH

- Diabetes Insipidus (DI)
  - ↓ Antidiuretic hormone (ADH) activity
- Syndrome of Inappropriate Antidiuretic Hormone (SIADH)
  - ↑ ADH activity

	Insufficient ADH	**Excess ADH**
Disorder	Diabetes Insipidus	SIADH
Signs & Symptoms	Polyuria, polydipisia, hypernatremia, dehydration	Fluid retention, weight gain, hyponatremia
Usual treatment	Synthetic ADH replacement	Treat cause
Priority nursing diagnoses	Risk for fluid volume deficit	Risk for fluid volume excess

Pituitary Disorders

Diabetes Insipidus (DI)

- Deficiency of circulating ADH
  - Prevention of adequate water reabsorption
    - Leads to diuresis
  - ***Nephrogenic*** DI
    - Sufficient amts of ADH
    - Kidneys not responsive to ADH
    - Urinary output – 4 -15 L/day (as much as 30L)
      - ↑ serum osmolality
      - dehydration

Pituitary Disorders

Diabetes Insipidus (DI)

- Etiology
  - Pituitary gland trauma or tumor
  - Neurosurgery
  - Head trauma
  - Infection
  - Vascular lesions
- Nephrogenic DI
  - Inherited defect
  - Renal tubular resistance to ADH

Pituitary Disorders

Diabetes Insipidus (DI)

S/S:

- Extreme polyuria
  - Nocturia
  - Resultant ↑ serum & ↓ urine osmolality
  - ↓ urine specific gravity (dilute)
- Extreme polydipsia
  - Large quantities of water is consumed
- If output > intake
  - Dehydration
  - Hypovolemic shock

Pituitary Disorders

Diabetes Insipidus (DI)

- Diagnosis
  - History of risk factors
  - Urine specific gravity < 1.005 (normal - 1.010 – 1.025)
  - ↓ urine osmolality – 50 to 200 mOsm/L (normal – 50 -1200 mOsm/L random specimen)
  - ↓ water volume in blood (plasma osmolality)
    - False hypernatremia
  - CT/MRI
    - May reveal pituitary tumor

Pituitary Disorders

Diabetes Insipidus (DI)

- Diagnosis (cont.)
  - Definitive diagnosis needs to reveal ADH deficiency
    - Water deprivation test
    - Positive test
      - Renal inability to concentrate urine during a water restriction
      - Urine continues to be dilute

Pituitary Disorders

Diabetes Insipidus (DI)

- Treatment
  - Hypophysectomy (pituitary removal)
    - Pituitary tumor
  - ADH (vasopression) replacement
    - Synthetic form of ADH
    - Used in acute disease
      - Lasts only 2 – 4 hours
  - Desmopression (DDAVP)
    - Nasal spray
    - Used for long-term therapy (i.e., hypophysectomy)
      - Lasts up to 20 hours

Pituitary Disorders

SIADH

- Too much ADH
  - Excess water reabsorbed
    - Kidney tubules/collecting ducts
    - Fluid overload
    - ↓ osmolality
      - Dilute blood
- Release of ADH continues
  - Normally
    - ↓ osmolality inhibits ADH release

Pituitary Disorders

SIADH

- Etiology
  - Oat cell carcinoma of lung (80% of all pts) & duodenal or pancreatic cancer
    - Ectopic sites
      - Secretes ADH or vasopressor-like substances
  - Certain drugs may ↑ ADH secretion
    - Tricyclic antidepressants, general anesthetics
  - Head trauma/surgery/brain tumor
    - Affecting pituitary function
  - Complication of DI treatment

Pituitary Disorders

SIADH

- Signs & symptoms
  - Weight gain
    - Fluid overload – usually without edema
  - Dilutional hyponatremia
    - Serum Na appears ↓
      - Due to ↑ water volume causing dilution
  - ↓ serum osmolality < 275 mOsm/kg (normal – 275-295 mOsm/kg)
  - Concentrated urine
    - Water not being excreted

Pituitary Disorders

SIADH

- Muscle cramps/weakness
  - Due to electrolyte imbalance
- Brain swelling
  - Due to ↓ serum osmo
    - Fluid leaks out of vessels
- Lethargy/siezures/coma/death
  - If untreated

Pituitary Disorders (anterior)

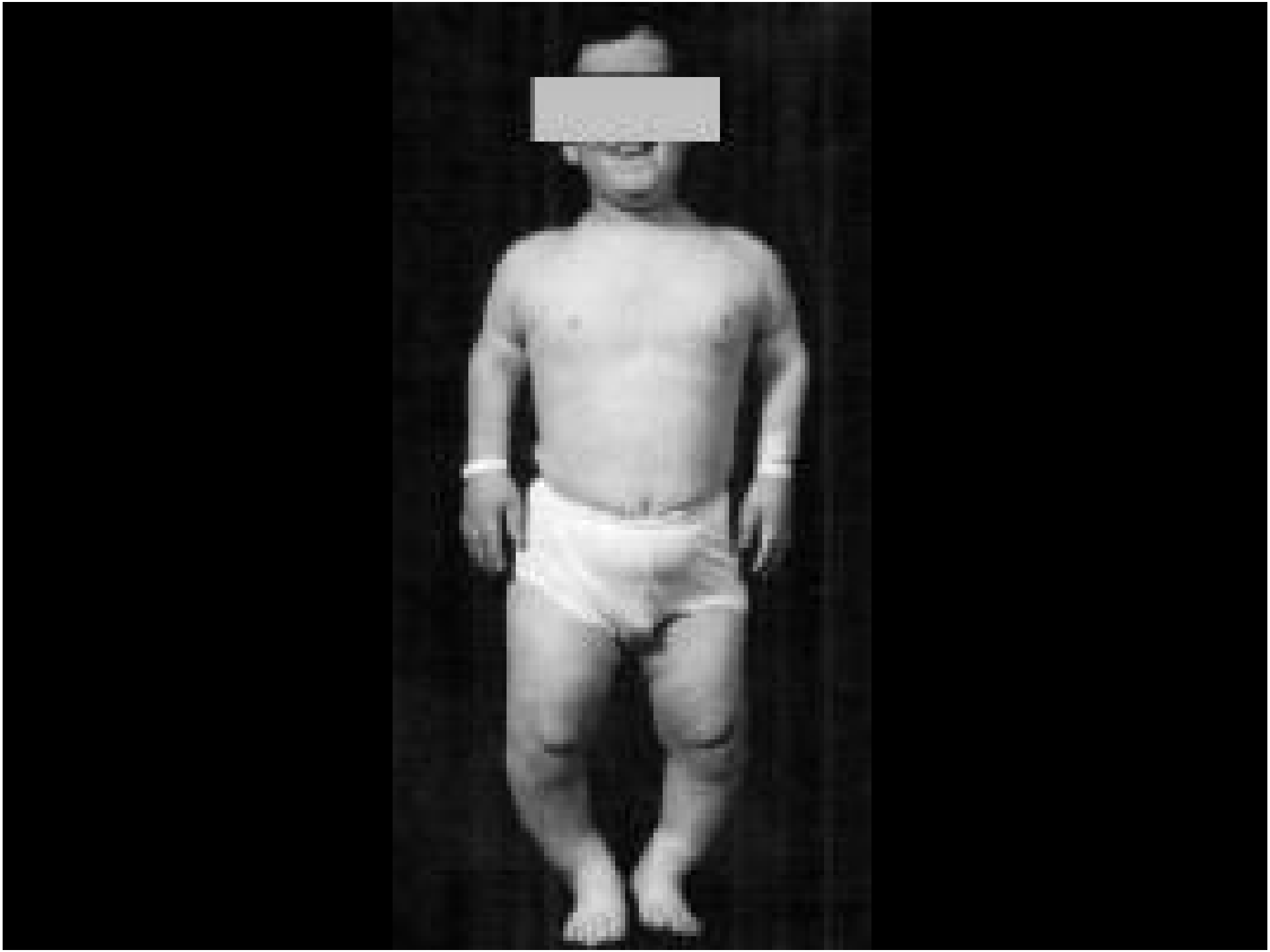
Dwarfism *GH*

- Aka: short stature
- Deficient growth hormone in children
  - Does not occur in adults
    - Growth already completed

Pituitary Disorders

Dwarfism

- Etiology
  - Pituitary tumor
  - Failure of pituitary development
  - neglect & severe emotional stress
    - *Psychosocial dwarfism*



Pituitary Disorders

Dwarfism

- Height of 3 – 4 feet
  - Normal body proportions
- Slowed sexual maturity
  - Related to additional pituitary hormone involvement
- Mental retardation may be present

Pituitary Disorders

Dwarfism

- Diagnosis
  - Serum blood tests
    - Measures growth hormone levels
  - Growth hormone stimulation test
    - Measures GH response to induced hypoglyemia
  - Radiographic testing
    - Pituitary tumor
    - To determine bone age

Pituitary Disorders

Dwarfism

- Treatment
  - Growth hormone administration
    - Synthetically engineered
      - Less expensive
  - Surgery
    - Indicated if presence of tumor

Pituitary Disorders (anterior)

Acromegaly

- Excess of growth hormone (GH)
  - Affects adults – 30 to 40's
- Gigantism
  - GH excess in children

Pituitary Disorders

Acromegaly

- Pathophysiology
  - Oversecretion of GH
    - Increase bone size
    - Enlargement of facial features, hands & feet
    - Long bones grow in width but not length
      - Due to closed epiphyseal disks
    - Increased subq connective tissue
      - Fleshy appearance
      - Enlarged internal organs and glands

Pituitary Disorders

Acromegaly

- Etiology
  - Hyperplasia of pituitary
  - Benign pituitary tumor
  - Hypothalamic dysfunction
  - Possible genetic link
    - Occasionally occurs in more than one family member

Pituitary Disorders

Acromegaly

- Signs & Symptoms
  - Change in hat/shoe size
  - Enlargement of nose, jaw, brow, hands and feet
  - Displacement of teeth
    - Chewing difficulties
  - Thickened tongue
    - Speaking/swallowing difficulties

Pituitary Disorders

Acromegaly

- Signs & Symptoms (cont.)
  - Vertebral changes
    - Kyphosis
  - Visual disturbances
    - Tumor pressure on optic nerve
  - Headache
    - Tumor pressure on brain
  - Diabetes
  - Osteoporosis/arthritis
  - Impotence in men
  - Amenorrhea

Pituitary Disorders

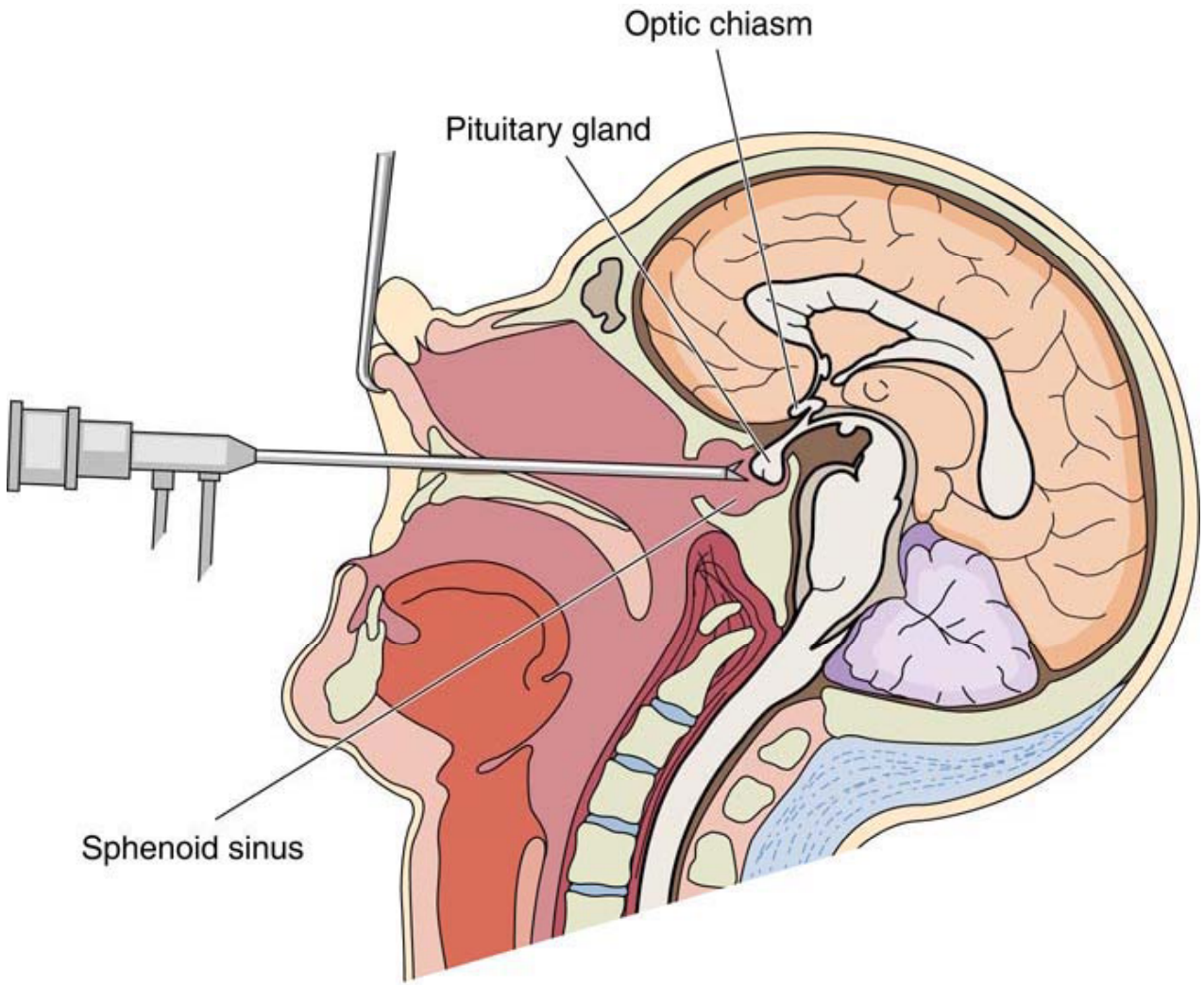
Acromegaly

- Diagnostic tests
  - Serum growth hormone
  - Radiographic tests
    - Abnormal bone growth
    - Presence & extent of pituitary lesion
  - Glucose suppression test
    - Glucose normally suppresses GH secretion
    - Glucose infusion
      - Fails to suppress GH < than normal value of 5ng
        - Highly suggestive of acromeglay in combo with characteristic clinical features

Pituitary Disorders

Acromegaly

- Treatment
  - Aimed at cause
  - Bromocriptine (Parlodel)
    - May ↓ GH levels
  - Hypophysectomy
    - Requires lifelong replacement of thyroid hormone, corticosteroids and sex hormones
  - Radiation


Optic chiasm
Pituitary gland
Sphenoid sinus

Thyroid Gland Disorders
Hypothyroidism

- Deficient secretion of thyroid hormones
- Most commonly affects women
  - 30 – 60 years of age
- Cretinism
  - Hypothyroidism in infants

Thyroid Gland Disorders
Hypothyroidism

- Pathophysiology
  - Primary hypothyroidism (most common)
    - ↓ TH from thyroid in response to adequate TSH
      - Pituitary responds to ↓ TH by ↑ TSH
  - Secondary hypothyroidism
    - ↓ TSH or TRH (hypothalamus)
      - Fail to stimulate release of TH

Thyroid Gland Disorders
Hypothyroidism

- Etiology
  - Primary
    - Congenital defect
    - Inflammation
    - Iodine deficiency
    - Thyroidectomy
    - ***Hashimoto's thyroiditis***
      - Autoimmune disorder – destroys thyroid tissue
        - Leads to hypothyroidism

Thyroid Gland Disorders
Hypothyroidism

- Etiology (cont.)
  - Secondary
    - Pituitary of hypothalamic lesion
    - Postpartum pituitary necrosis
      - Rare disorder
      - Pituitary destructs following pregnancy & delivery
    - Peripheral resistance to TH

Thyroid Gland Disorders
Hypothyroidism

Signs & Symptoms:

- Related to ↓ metabolic rate
  - Fatigue
  - Weight gain
  - Bradycardia
  - Constipation
  - Mental dullness
  - Cold intolerance
  - Hypoventilation
  - Dry skin and hair

Thyroid Gland Disorders
Hypothyroidism

Signs & Symptoms (cont.)

- Heart failure
  - ↓ pumping strength of heart
  - Accumulation of fluid around heart
- Hyperlipidemia
  - Altered fat metabolism
- Myxedema
  - Water retention
    - Facial puffiness, esp. around eyes

Thyroid Gland Disorders
Hypothyroidism

Complications

- Myxedema coma
  - Severely ↓ metabolic rate
    - Hypothermia (< 95° F)
    - ↓ respirations & BP
    - Depressed mental function & lethargy
    - ↓ blood glucose
    - Death
      - Due to respiratory failure

Thyroid Gland Disorders
Hypothyroidism

- Diagnostic Tests
  - T3 & T4 are low
  - TSH may be ↑ or ↓
    - Depending on cause
    - If pituitary functioning
      - TSH will be ↑ in attempt to ↑ TH
  - ↑ cholesterol is common

Thyroid Gland Disorders
Hypothyroidism

- Treatment
  - Thyroid replacement hormone
    - Levothyroxine (Synthroid) most commonly used
    - Started at low dose
      - Increased gradually
        - Prevent s/s of hyperthyroidism & cardiac complications

Thyroid Gland Disorders
Hyperthyroidism

- Excess amounts of circulating TH
- Causes
  - Grave's disease
    - Young women
  - Multinodular goiter
    - Older women

Thyroid Gland Disorders
Hyperthyroidism

- Pathophysiology
  - Primary
    - Problem with thyroid causing ↑ hormone release
  - Secondary
    - Excess TSH from pituitary
    - Excess TRH from hypothalamus
    - Both overstimulate the thyroid

Thyroid Gland Disorders
Hyperthyroidism

- Etiology
  - Graves' disease – most common cause
    - Autoimmune disorder
      - Thyroid – stimulating antibodies present in blood
  - Multinodular goiter
    - Thyroid nodules secrete excess TH
  - Pituitary tumor
    - Secrete excess TSH
      - Overstimulates thyroid
  - Thyroid tumor
    - Secrete TH
  - Exogenous over dosage of thyroid hormone

Thyroid Gland Disorders
Hyperthyroidism

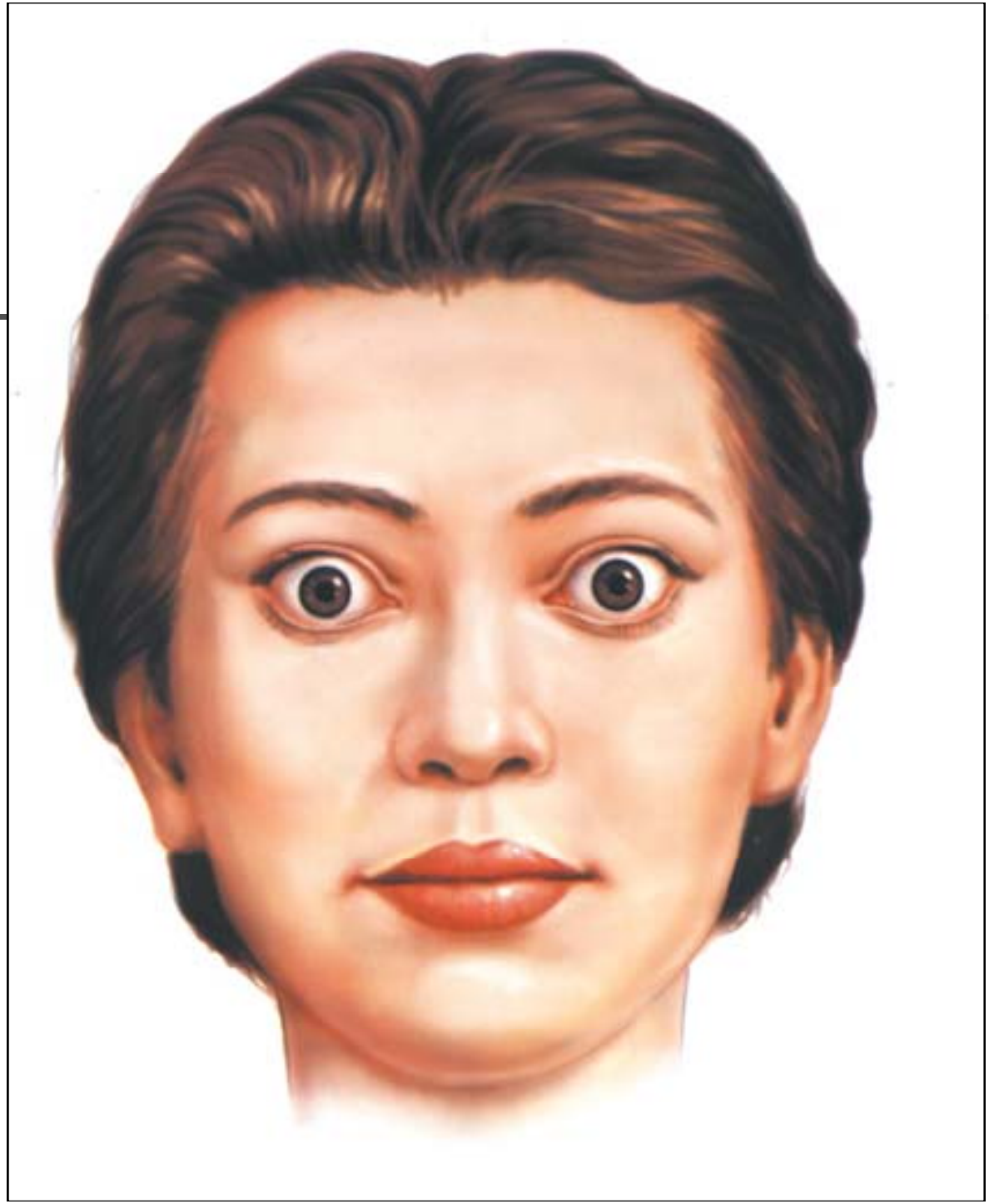
Signs & Symptoms

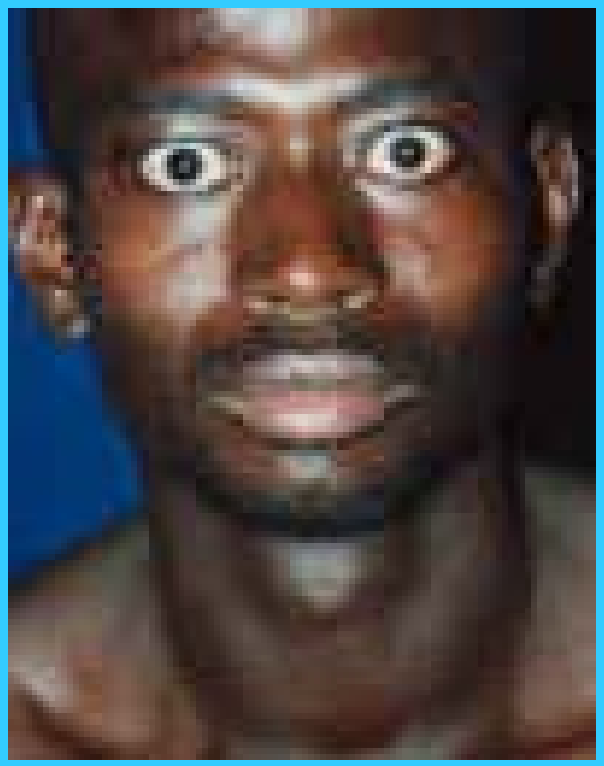
- Related to hypermetabolic state
  - Heat intolerance
  - Increased appetite w/weight loss
  - Increased frequency of bowel movements
  - Nervousness, tremor, tachycardia, palpitations
    - Due to ↑ in sympathetic nervous system activity
    - Heart failure
  - Emotional lability
  - Warm smooth skin, fine soft hair
  - Muscle weakness

Thyroid Gland Disorders
Hyperthyroidism

Signs & Symptoms (cont.)

- Mania or psychosis
- ***Exophthalmos***
  - Bulging of eyes
    - Due to swelling of tissues behind eyes
- Skin thickening
  - Esp. of anterior legs
- Decreased libido, impotence, amenorrhea





Thyroid Gland Disorders
Hyperthyroidism

- Complications
  - ***Thyrotoxic Crisis (Thyroid Storm)***
    - Severe hyperthyroid state
    - Occurs in hyperthyroid individuals experiencing another stressor/illness
    - May result in death in as little as 2 hours
    - Symptoms in addition to hyperthyroid state
      - Extreme irritability
      - Hypertension, tachycardia, heart failure
      - Vomiting
      - Temp as high as 106°F
      - Delirium, coma

Thyroid Gland Disorders

Hyperthyroidism

- Complications (cont.)
  - Hypothyroidism
    - Result of
      - long-term disease
      - Treatment of hyperthyroidism

Thyroid Gland Disorders

Hyperthyroidism

- ↑ serum T3 and T4
- ↓TSH if primary hyperthyroidism, ↑TSH if pituitary dx
- TRH stimulation test
  - Indicates hyperthyroidism if TSH fails to rise within 30 minutes after TRH administration
- Thyroid scan
  - Locate a tumor

Thyroid Gland Disorders

Hyperthyroidism

- Treatment → aim is **euthyroid state**
  - Propylthiouracil (PTU)/methimazole (Tapazole)
    - Inhibit TH synthesis
  - Inderal
    - Relieves sympathetic nervous system symtoms
  - Radioactive iodine
    - Destroys thyroid tissue
  - Oral iodine
    - Suppresses the release of thyroid hormone

Thyroid Gland Disorders

Hypothyroidism & Hyperthyroidism

- Thyroid hormone abnormalities:

	Hyperthyroidism	Hypothyroidism
Primary	↑TH ↓TSH	↓TH ↑TSH
Secondary (Pituitary cause)	↑TH ↑TSH	↓TH ↓TSH

Thyroid Gland Disorders

Goiter

- Enlargement of thyroid gland
- Etiology
  - ↑ TSH from:
    - Low TH
    - Iodine deficiency
      - Endemic goiter
    - Pregnancy
    - Viral
    - Genetic
    - Other conditions

Thyroid Gland Disorders

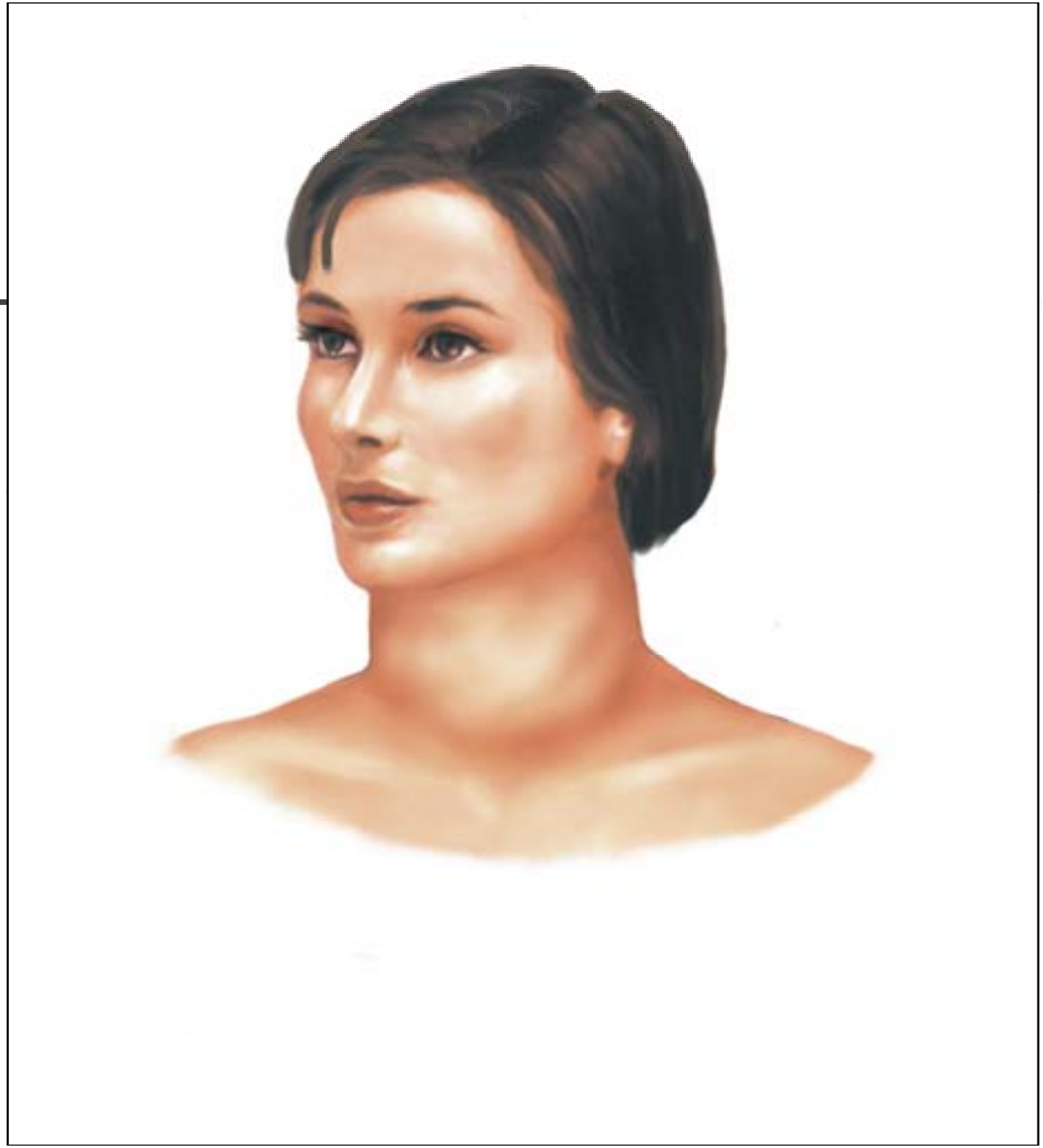
Goiter

- Etiology (cont.)
  - Goitrogens - Substances that interfere with body's ability to utilize iodine
    - Foods
      - Turnips, cabbage, broccoli, horseradish, cauliflower & carrots
    - Medications
      - PTU, sulfonamides, lithium & salicylates

Thyroid Gland Disorders

Goiter

- Signs & Symptoms
  - Enlarged thyroid
    - Neck swelling
    - Full sensation subjectively
    - May interfere with breathing/swallowing
    - Signs/Symptoms of hyper/hyperthyroid



Thyroid Gland Disorders

Goiter

- Diagnostic tests
  - Thyroid scan
    - Enlarged thyroid
  - Serum T3 & T4
    - Determine thyroid function

Thyroid Gland Disorders

Goiter

- Treatment
  - Avoidance of goitrogens
  - Iodine supplementation
  - Thyroidectomy
    - Necessary with interruption of breathing/swallowing

Thyroid Gland Disorders

Thyroid Cancer

- Most common endocrine cancer
- Rare cancer
  - Usually nonmalignant
- More common in women

Thyroid Gland Disorders

Thyroid Cancer

- Etiology
  - Thyroid hyperplasia
  - Radiation exposure
  - Iodine deficiency
  - Prolonged exposure to goitrogens

Thyroid Gland Disorders

Thyroid Cancer

- Signs & Symptoms
  - Hard, painless nodule
    - Noted upon palpation
  - Difficulty breathing/swallowing
  - Voice change
    - Tumor near esophagus/trachea
  - Usually normal TH

Thyroid Gland Disorders

Thyroid Cancer

- Diagnostic tests
  - Thyroid scan
    - "cold" nodule
  - Fine – needle biopsy
    - Done to confirm diagnosis

Thyroid Gland Disorders

Thyroid Cancer

- Treatment
  - Partial or total thyroidectomy
  - Chemotherapy
  - Radioactive iodine

Thyroid Gland Disorders

Thyroidectomy

- Done for cancer, hyperthyroidism or goiter associated w/dysphagia
- Total thyroidectomy
  - Cancer treatment
  - Requires lifelong thyroid hormone replacement
- Subtotal or partial thyroidectomy
  - Leaves portion of thyroid
    - Enough to secrete TH

Thyroid Gland Disorders

Thyroidectomy

Complications

1. Thytotoxic crisis
   - Manipulation of thyroid during surgery
     - Subsequent release of large amts of TH
2. Tetany
   - Low calcium levels
   - Occurs if parathyroid glands accidentally removed

Parathyroid Gland Disorders

- Four small glands
- Lie behind thyroid
- Secrete parathyroid hormone (PTH)
  - Response to low serum calcium
  - Raises CA by:
    - Promoting Ca++ movement from bones to blood
    - Increasing dietary calcium absorption
    - Decrease kidney secretion of calcium

Parathyroid Gland Disorders

Hypoparathyroidism

- Decreased PTH activity
  - Causes ↓ in bone resorption of calcium
    - Stays in bone
    - Not moved into blood
  - Hypocalcemia
    - Low calcium causes phosphate to rise

Parathyroid Gland Disorders

Hypoparathyroidism

- Etiology
  - Heredity
  - Accidental removal during thyroidectomy
  - Hypomagnesemia
    - Usually from alcoholism or nutritional deficiency
  - Removal of parathyroid glands
    - Correction of hyperparathyroidism

Parathyroid Gland Disorders

Hypoparathyroidism

- Signs & Symptoms
  - Neuromuscular irritability
  - Acute hypoparathyroidism
    - Tetany
      - Positive Chvostek's sign
        - Spasm of facial muscle following tap over facial nerve
      - Positive Trousseau's sign
        - Muscular spasm resulting from pressure applied to nerves/vessels of upper arm

Parathyroid Gland Disorders

Hypoparathyroidism

- Signs & Symptoms (cont.)
  - Chronic hypoparathyroidism
    - Lethargy
    - Muscle spasms
    - Eye & brain calcifications
      - Leading to psychosis
      - Convulsions may occur
    - Death if not treated
      - Laryngospasm

Parathyroid Gland Disorders

Hypoparathyroidism

- Diagnostic tests
  - ↓ serum calcium
  - ↓ PTH levels
  - + Chovstek & Trousseau signs

Parathyroid Gland Disorders

Hypoparathyroidism

- Treatment
  - Acute
    - IV calcium gluconate
    - Breathing into a paper bag
  - Long term
    - High calcium diet
    - Calcium & vitamin D supplementation
    - Thiazide diuretics
      - ↓ amount calcium excreted in urine

Parathyroid Gland Disorders

Hyperparathyroidism

- Increased PTH activity
  - Overactivity of one or more parathyroid gland causes hypercalcemia
    - **Calcium moves out of bones → blood**
    - **Ca is absorbed in small intestine**
    - **Ca is reabsorbed by kidneys**
    - **Also ↑phosphate excretion by kidneys**

Parathyroid Gland Disorders

Hyperparathyroidism

- Etiology
  - **Parathyroid hyperplasia or tumor**
  - **Hereditary**
  - **Certain cancers**
  - **Secondary hyperparathyroidism**
    - **↑ PTH secretion in response to low serum ca++**
      - **May be due to kidney disease**
        - **Failure of kidneys to activate vitamin D**
        - **Necessary for ca++ absorption in intestine**

Parathyroid Gland Disorders

Hyperparathyroidism

- Signs & Symptoms
  - Caused mainly by ↑ Ca++ in blood
  - Many pts asymptomatic, but symptoms include:
    - Fatigue, depression, confusion
    - ↑ urination
    - Anorexia, n/v
    - Kidney stones
    - Cardiac dysrhythmias
    - Pathologic fractures

Parathyroid Gland Disorders

Hyperparathyroidism

- Diagnostic tests
  - Elevated serum calcium
  - Decreased phosphate levels
  - Elevated PTH
  - Radiographic tests
    - Decreased bone density

Parathyroid Gland Disorders

Hyperparathyroidism

- Treatment
  - IV NSS
    - Hydration dilutes calcium levels
  - Furosemide (Lasix)
    - Increase renal calcium excretion
  - Calcitonin or pamidronate (Aredia)
    - Prevents Ca++ release from bones
  - Parathyroidectomy for:
    - Severe hypercalcemia
    - Pt at risk for bone/kidney complications

Adrenal Gland Disorders

- Medulla involvement
  - Epinephrine hypersecretion
    - Pheochromocytoma
- Cortex involvement
  - Cortisol hypersecretion
    - Cushing's syndrome
  - Cortisol hyposecretion
    - Addison's disease

Adrenal Gland Disorders

Pheochromocytoma

- Uncommon tumor
  - Arises in chromaffin cells
  - Secretes catecholamines in excessive amts
  - Ninety percent are benign
- Etiology
  - Unknown
  - Ten percent are hereditary

Adrenal Gland Disorders

Pheochromocytoma

- Signs & Symptoms
  - Exaggerated fight or flight symptoms
    - Hypertension
    - Tachycardia (>100 bts/min), palpitations
    - Diaphoresis
    - Feeling of apprehension
    - ↑ blood glucose
    - Severe pounding headache

Adrenal Gland Disorders

Pheochromocytoma

- Diagnostic tests
  - 24 hour urine
    - Metanephrines & vanillylmandelic acid (VMA)
      - End – products of catecholamine metabolism
    - Avoidance of caffeine, foods high in vanillin & certain meds
- CT scan/MRI
  - If 24 hour urine test positive
  - Locates tumor

Adrenal Gland Disorders

Pheochromocytoma

- Treatment
  - Surgical removal of one or both adrenal gland
  - Stabilization pre-operatively
    - Alpha-blocking medications
      - Phentolamine (Regitine)
      - Phenoxybenzamine (Dibenzyline)
    - Beta blocking agents
      - Propranolol

Adrenal Gland Disorders

Adrenal insufficiency (AI)

- Insufficient production of adrenal cortex hormones
- Addison's disease
  - Primary AI
    - Originates within the adrenal gland itself
- Secondary AI
  - Originates outside gland
    - i.e., pituitary tumor w/ACTH deficiency

Adrenal Gland Disorders

Adrenal insufficiency (AI)

- Pathophysiology
  - ↓ levels of cortisol, aldosterone or both
  - ↓ androgens may occur
    - Usually no s/s
  - *Addison's disease*
    - ACTH ↑
    - In attempt to stimulate adrenal cortex
      - Synthesize more hormones (doesn't respond)
  - *Secondary disease*
    - Deficient ACTH fails to stimulate synthesis of hormones

Adrenal Gland Disorders

Adrenal insufficiency (AI)

- Etiology
  - Addison's disease
    - Autoimmune component
      - Gland destroys self in response to
        - Tb, fungal infections, AIDS, metastasic ca
      - Associated with other autoimmune dxs
        - Hashimoto's thyroiditis
    - Adrenalectomy

Adrenal Gland Disorders

Adrenal insufficiency (AI)

- Etiology (cont.)
  - Secondary AI
    - Dysfunction of the pituitary or hypothalamus
    - Withdrawal after prolonged use of corticosteriod drugs
      - May depress ACTH & corticotropin-releasing hormone production → reduces endogenous steroids
      - Pts on long term therapy are esp. at risk
        - May take up to a year for endogenous ACTH to be produced
        - **Corticosteroid therapy – always tapered – NEVER abruptly stopped!**

Adrenal Gland Disorders

Adrenal insufficiency (AI)

- Signs & Symptoms
  - Related to deficient aldosterone
    - Hypotension
    - Tachycardia
    - Anorexia, n/v
      - Possibly due to electrolyte imbalance
  - Related to deficient cortisol
    - Hypoglycemia
    - Weakness, fatigue, confusion, psychosis

Adrenal Gland Disorders

Adrenal insufficiency (AI)

- Complications
  - ***Adrenal crisis (Addisonian crisis)***
    - Exposure to stress (physical or psychological)
    - Body unable to respond
      - Cannot secrete adequate amts aldosterone & cortisol
      - Loss of large amts of Na & water
        - Fluid volume deficit
        - Profound ↓ BP, dehydration & ↑ heart rate
        - K+ retention – cardiac dysrhythmias
      - Severe hypoglycemia

Adrenal Gland Disorders

Adrenal insufficiency (AI)

- Diagnostic tests
  - Serum & urine steroids
  - Blood glucose
  - BUN, hematocrit
    - May appear ↑ due to dehydration
  - ACTH stimulating test
    - Determines whether adrenal gland functioning
  - Serum sodium & potassium

Adrenal Gland Disorders

Adrenal insufficiency (AI)

- Treatment
  - Hormone replacement for remainder of life
    - glucocorticoids (hydrocortisone)
    - mineralocorticoids (fludrocortisone)
  - Administered to mimic body's normal diurnal rhythm
    - 2/3rd in AM, 1/3rd in evening
  - Dosage ↑ during times of stress
    - 2-3 times normal dose

Adrenal Gland Disorders

Cushing's Syndrome

- Pathophysiology
  - Excess cortisol secretion
  - Without regard to diurnal rhythm or stressful times
  - Excess aldosterone & androgens may also be seen with extreme elevation

Adrenal Gland Disorders

Cushing's Syndrome

Etiology

- Cushing's disease:
  - Result from too much ACTH from pituitary
  - Results in hyperplasia of adrenal cortex
  - Pituitary adenoma
    - Increases ACTH production
  - ACTH producing tumor in another organ
    - esp. bronchogenic or pancreatic cancer

Adrenal Gland Disorders

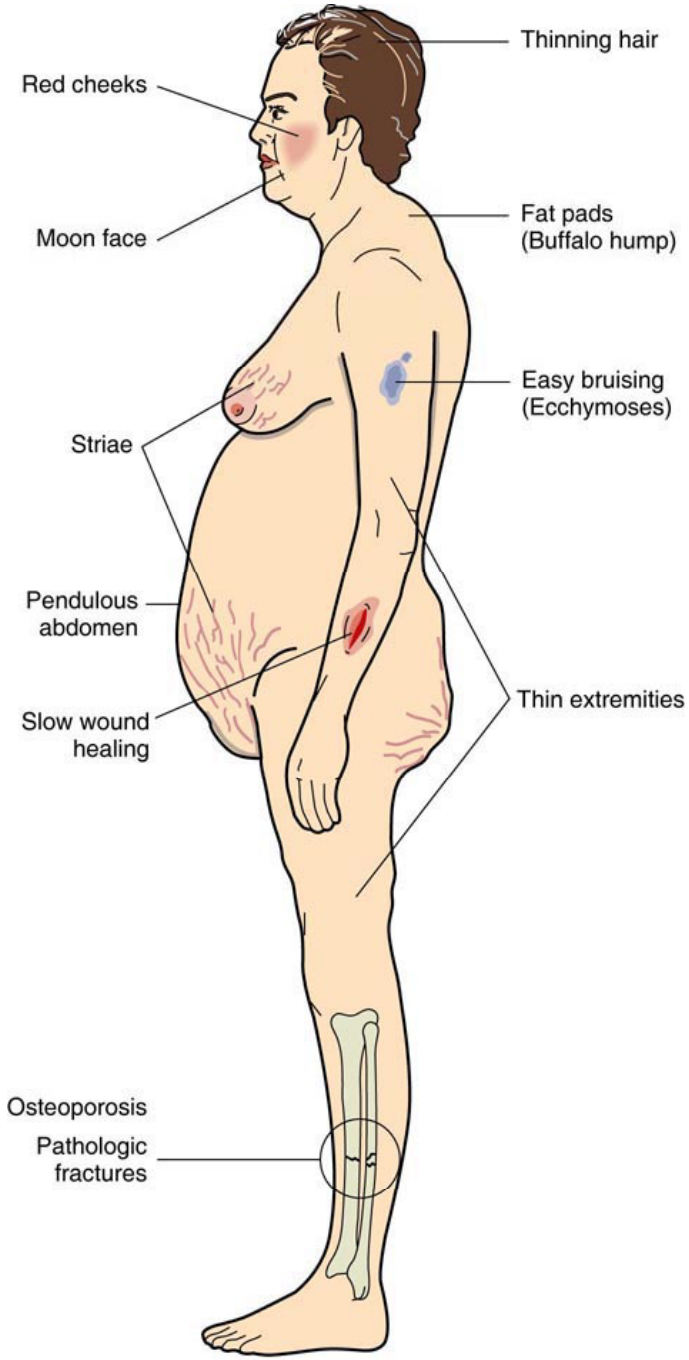
Cushing's Syndrome

- Etiology (cont.)
  - Prolonged glucocorticoid administration
    - Most common cause
    - Usually used for chronic inflammatory dx
      - COPD, arthritis, Crohn's dx

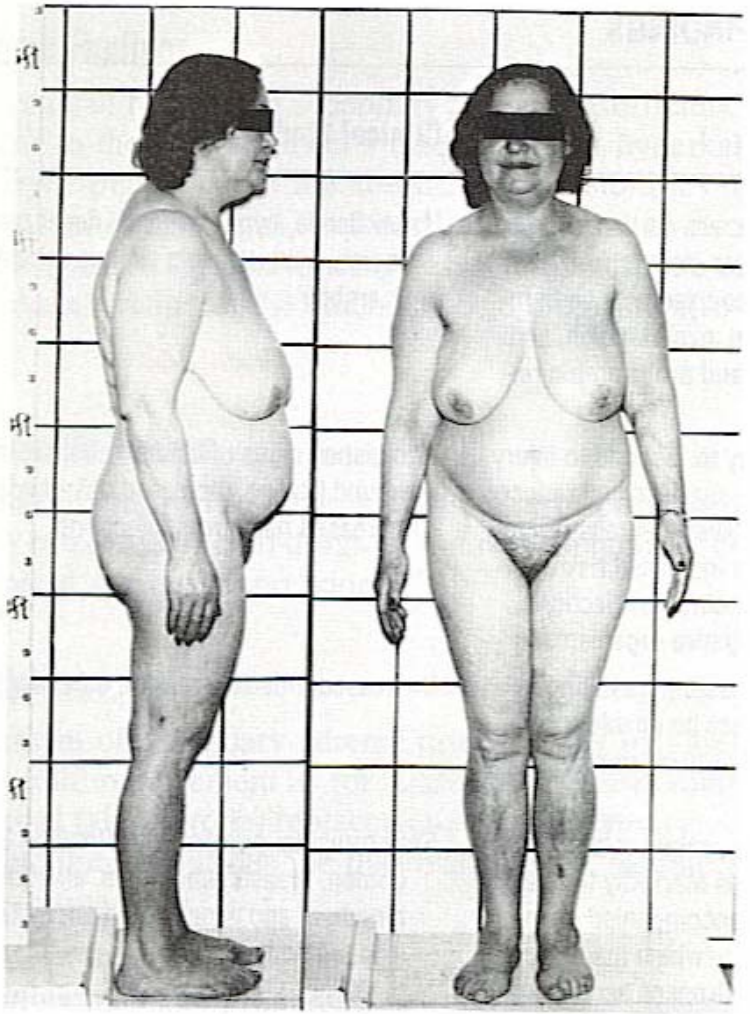
Adrenal Gland Disorders

Cushing's Syndrome

- Signs & Symptoms
  - Weight gain
  - Truncal obesity w/thin arms & legs
  - Buffalo hump
  - Moon face (facies)
  - Insulin resistance → gluconeogenesis → glucose intolerance
    - Secondary DM may develop


Thinning hair
Red cheeks
Moon face
Fat pads
(Buffalo hump)
Easy bruising
(Ecchymoses)
Striae
Pendulous
abdomen
Slow wound
healing
Thin extremities
Osteoporosis
Pathologic
fractures

A



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Adrenal Gland Disorders

Cushing's Syndrome

- Signs & Symptoms (cont.)
  - Catabolic effects of cortisol leads to
    - Muscle wasting
    - Thin skin w/purple straie
    - Osteoporosis, pathologic fractures, back pain
  - Risk for infection
    - Due to cortisol's anti-inflammatory/immunosuppressive effect
  - Hyperpigmentation of skin

Adrenal Gland Disorders

Cushing's Syndrome

- Signs & Symptoms (cont.)
  - ~ 50% of pts develop mental status Δ's
    - Irritability → psychosis (steroid psychosis)
  - Mineralocorticoid effects
    - Sodium & water retention
    - Hypokalemia
  - Androgen effects
    - Acne, facial hair
    - amenorrhea

Adrenal Gland Disorders

Cushing's Syndrome

- Diagnostic tests
  - Physical appearance
  - Plasma & urine cortisol levels
    - Shows no normal diurnal variation
  - ACTH levels
  - Dexamethasone suppression test
    - Confirms diagnosis

Adrenal Gland Disorders

Cushing's Syndrome

- Treatment
  - Surgical removal of ACTH-secreting tumor
  - Radiation or removal of adrenals.
  - Drugs to block adrenal steroid production
    - Ketoconazole (Nizoral)
  - Reduction of exogenous steroid meds