PROBLEMS WITH REGULATION AND METABOLISM

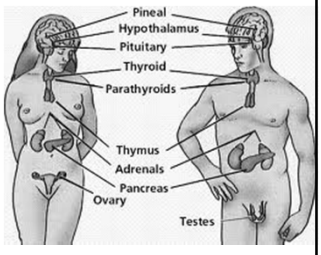
Lemone and Burke Chapters 18-20

Objectives

- Review A & P
- Recall age related changes
- Identify diagnostic tests
- Describe etiology, pathophysiology, clinical manifestation, complications, and collaborative management of:
  - Diabetes Mellitus
  - Cushing's Syndrome
  - Addison's Disease
- Compare and contrast DM I and DM II

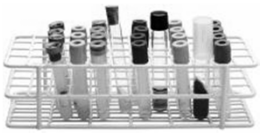
A & P

- Pituitary gland
- Pineal gland
- Parathyroid glands
- Thyroid gland
- Thymus
- Adrenal gland
- Pancreas
- Gonads



Diagnostic tests

- FBS
- Hgb A1C
- Cortisol
- CT



Endocrine Assessment

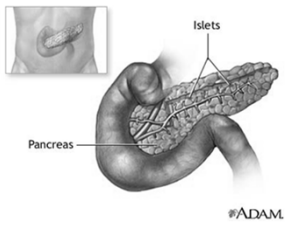
- Inspect skin color
  - Hyperpigmentation – Addison's + Cushing's
  - Hypopigmentation - DM
- Inspect hair and nails
  - Addison's – increased pigment on nails
  - Cushing's - hirsutism
- Sensory function
  - Neurovascular assessment

Diabetes Mellitus

- 6th leading cause of death
- Increased risk for
  - CAD
  - Stroke
  - ESRD
  - Blindness
- Pt's w DM account of disproportionate share of healthcare money

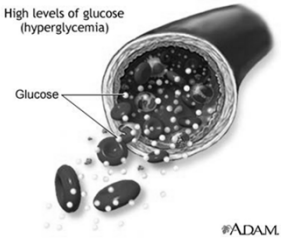
Type I Diabetes

- Cause – destruction of beta cells of islets of Langerhans
- Risk factors:
  - Genetic
  - Viral infection
  - Chemical toxins



Manifestation DM I

- Hyperglycemia
- Polyuria
- Polydypsia
- Polyphagia
- Ketosis



Type II Diabetes

- Cause – cellular resistance to insulin
- Usually seen in middle age or older adult
- Risk factors:
  - Family history
  - Obesity
  - Physical inactivity
  - Ethnicity
  - Hypertension

Interdisciplinary Care

- FBS and Hgb A1C
- Monitor blood glucose
- Medications
  - Insulin
    - Regular – (clear) short acting used for SS or insulin drip
    - NPH – (cloudy) intermediate acting
    - Comination (cloudy) onset short, duration long
    - Lantus – (clear) long acting (24hrs), no peak, given daily
  - Hypogycemic agents

Interdisciplinary Care - cont

- Diet
  - Complex carbs
  - Limit fructose
  - Low protein
  - Increase fiber
  - Sweeteners instead of refined sugars
- Exercise
- Surgery

Complications

- DKA
  - Fluid replacement
  - Insulin
  - Check K
- HHS
  - Fluid replacement
  - Insulin
  - Check K
- Hypoglycemia

Chronic Complications

- Cardiovascular
  - CAD
  - HTN
  - CVA
  - PVD
  - Diabetic retinopathy
  - Diabetic nephropathy
- Nervous system
- Susceptibility to infection
- Complication of feet

Interventions

- History
  - Fam hx, voiding, hunger, thirst, HTN, numbness hands and feet, changes in vision
- Assessment
  - Height, weight, neurovascular assessment
- Teaching
  - Check blood sugar
  - Diet
  - Exercise
  - Warning signs of hypo- and hyperglycemia
  - Assess feet

Hypo and Hyperglycemia

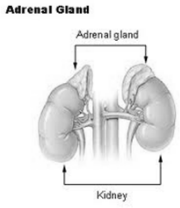
Hypoglycemia	Hyperglycemia
Hunger	Thirst
N/V	Poor skin turgor
Shakiness/irritability	Dry mucous membranes
Up pulse, down BP	Weakness/malaise
Slurred speech	Up pulse, down BP
Blurred vision	N/V
HA	Fruity breath
Decrease LOC	Lethargy
Seizure	Coma
Coma	

Nursing diagnosis

- Risk for impaired skin integrity
  - Assess
  - Hydrate
  - Teach
- Risk for infection
- Risk for injury
- Sexual dysfunction
- Ineffective coping

Disorders of the Adrenal Gland

- Result from changes in production of adrenocorticotropic hormone (ACTH)
- Result in physical, psychological, and metabolic changes that can be life-threatening
- Cushing's Syndrome
- Addison's Disease



Cushing's Syndrome

- Hyperfunction of the adrenal cortex
- Onset most common between 30 -50 years
- Females more frequently affected
- Causes:
  - Long term steroid use
  - Pituitary tumor
  - Adrenal tumor

Cushing's Manifestations

- Moon face
- Buffalo hump
- Fat pads
- Thinning of skin
- Abdominal striae
- Hirsutism
- Poor woundhealing
- DM
- Hypertension
- Osteoporosis
- Hypokalemia
- Hypernatremia
- Hyperglycemia

Cushing's Diagnostic Tests

- Na – increased
- K – decreased
- Glucose – increased
- 24 h urine – free cortisol
- Plasma ACTH – decreased in primary
- Plasma cortisol – increased
- Metabolic alkalosis

Interdisciplinary Care and Treatment

- History
  - Tumor of pituitary or adrenal glands
  - Infections
  - Change in weight
  - Change in appearance
  - Bruising
  - Weakness
- Physical
  - Vs
  - Apprearance
  - Hair and fat distribribution
  - Muscle size +strength

Interdisciplinary - cont

- Medications
  - Mitotane –
    - suppresses activity of adrenal cortex
  - Aminogluthemide –
    - Inhibits cortisol synthesis
  - Somatostatin –
    - Suppressed ACTH secretion
- Diet
  - Low sodium
- Surgery
  - Adrenalectomy for tumor
  - Removal of pituitary gland for disorder

Cushing's Nursing Dx

- Fluid volume excess
- Risk for injury
- Risk for infection
- Disturbed body image
- Knowledge deficit

Addison's Disease

- Adrenal hypofunction
- Results from destruction of adrenal cortex
  - Underproduction of glucocorticoids and mineralocoticoids
- Most common between ages 30-50
- Females are 2 x as likely to have than males
- Causes:
  - Autoimmune reaction cause 70-80% of cases
  - Genetic link
  - Pituitary tumor or mets from lung CA
    - elevated

Addison's Manifestations

- Fatigue
- Muscle weakness
- N/V
- Abdominal pain
- Salt craving
- Anorexia
- Hypotension
- Osteoporosis
- Hyperpigmentation
- Hyperkalemia
- Hyponatremia
- Hypoglycemia

Addison's Diagnostic Tests

- Na - decreased
- K – increased
- Glucose – decreased
- BUN – increased
- H + H – increased
- Cortisol – decreased
- ACTH – increased in primary
- CT scan

Interdisciplinary Care +Treatment

- History
  - Weight loss
  - Skin changes
  - N/V
  - weakness
- Physical
  - VS
  - Height/weight
  - Skin color
  - Muscle strength
- Medication
  - IV fluids
  - Glucocorticoids
    - Cortisone,
    - Dexamethasone
    - Hydrocortisone
    - Prednisone
  - Mineralcorticoids
    - Florinef
- Diet
  - Increase sodium

Nursing diagnosis

- Deficient fluid volume
- Knowledge deficit
- Risk for ineffective therapeutic regiment mamagement
- Disturbed body image

NCLEX

- A client needs a Hemoglobin A1C test and asks the nurse about the purpose for the test. Which is the appropriate response to the patient?
  - A. It's a blood test to check for menopausal symptoms
  - B. It's a blood test to check kidney function
  - C. It's to check thyroid function
  - D. It's to check pancreas function

NCLEX

- A client comes into the emergency department with Addisonian crisis. Which of the following should the nurse be prepared to administer to assist this client?
  - A. Warm blankets
  - B. IVF
  - C. Thyroid replacement hormones
  - D. Blood transfusion

NCLEX

- A client with intractable asthma develops Cushings' s syndrome. This complication can most likely be attributed to chronic use of:
  - A. Prednisone
  - B. Theophylline
  - C. Metaproterenol
  - D. Cromolyn (Intal)