

Diabetes insipidus

- Lab findings

Urine chemistry (THINK DILUTE) = decrease specific gravity (<1.005), decrease osmolality (<200)

Serum chemistry (THINK CONCENTRATED) = increase osmolality (>300), increased Na⁺, increased K⁺

- Pharmacologic treatment and expected findings

Polyuria (abrupt onset of excessive urination, UO 4-30L/day), polydipsia, nocturia, fatigue, dehydration

ADH replacement agents → Desmopressin

SIADH

- Manifestations

Early manifestations □ HA, weakness, anorexia, muscle cramps, and weight gain (w/ o edema because water, not sodium is retained)

As serum Na⁺ decreases □ personality changes, hostility, sluggish DTRs, N/V/D, and oliguria w/ dark yellow concentrated urine

- Interventions
 - o Restrict oral fluids
 - o Monitor I&O
 - o Monitor VS for increased BP, tachycardia, and hypothermia
 - o Auscultate lung sounds to monitor for pulmonary edema
 - o Weight client daily
 - o Report altered mental status
 - o Reduce environmental stimuli
 - o Monitor urine and blood chemistry
 - o Tetracycline derivative → Unlabeled use to correct fluid and electrolyte imbalances by stimulating urine flow
 - o Vasopressin antagonist
 - o Loop diuretic (furosemide)
 - o Hypertonic sodium IV fluid
 - o *****Oral fluid restriction is a key intervention for these clients due to them having excess water in the body causing dilutional hyponatremia. Oral fluid restriction should be roughly 500-1000mL per day.

Cushing's

- Manifestations

- o Classic picture→ central-type obesity, with a fatty “buffalo hump” in the neck and supraclavicular areas, a heavy trunk, and relatively thin extremities
- o Evidence of decreased immune function and decreased inflammatory response
 - Thin, fragile skin
- o Bruising and petechiae
- o Tachycardia
- o Gastric ulcers d/t oversecretion of hydrochloric acid
- o Weight gain and increased appetite, weakness, fatigue, decreased libido

- Interventions

Monitor I&O and daily weight

Assess for indications of hypervolemia

Maintain a safe environment to minimize risk of pathologic fracture and skin trauma

Prevent infection by performing frequent hand hygiene,

Encourage physical activity within client’s limitations

Provide meticulous skin care

Change the client’s position every 2 hrs

Monitor for and protect against skin breakdown and infection

Use surgical asepsis when performing dressing changes and any invasive procedures

Monitor WBC count with differential daily

Treatment depends on cause; for Cushing’s syndrome, tapering off glucocorticoids and managing symptoms are necessary

Adrenalectomy

Monitor urine for cortisol

***** Advise the client to eat foods high in calcium and vitamin D. The client should not ingest alcohol or caffeine. Advise the client to monitor for indications of gastric bleeding, such coffee-ground emesis or black, tarry stools.

Addison’s

- Causes

Hypofunctioning adrenal cortex and a lack of adequate amounts of serum cortisol

Caused by damage or dysfunction of the adrenal cortex

Surgical removal or infection of adrenal glands

Tuberculosis and histoplasmosis are the most common infections that destroy adrenal gland tissue

Inadequate secretion of ACTH from the pituitary gland also results in adrenal insufficiency because of decreased stimulation of the adrenal cortex

Therapeutic use of corticosteroids is the most common cause of adrenocortical insufficiency

- Manifestations

Weight loss, craving for salt, hyperpigmentation, weakness and fatigue, N/V, abd pain, constipation or diarrhea, dizziness w/ orthostatic hypotension, dehydration, hyponatremia, hyperkalemia, hypoglycemia, hypercalcemia

With disease progression, Addisonian crisis develops

Characterized by hypotension, cyanosis, fever, nausea, vomiting, and classic signs of shock

In addition, the patient may have pallor; complain of headache, abdominal pain, and diarrhea; and may show signs of confusion and restlessness

Pheochromocytoma

- Manifestations

severe episodic hypertension accompanied by severe, pounding headache; tachycardia with palpitations; profuse sweating; and unexplained abdominal or chest pain → do not palpate or press on tumor

Myxedema Coma

- Manifestations

Respiratory failure, hypotension, hypothermia, hypoventilation, bradycardia, dysrhythmia, hyponatremia, hypoglycemia, coma

- Nursing interventions
 - o Maintain airway patency
 - o Initiate aspiration precautions
 - o Administer IV fluids as prescribed

Thyroid storm

- Causes
 - o Uncontrolled hyperthyroidism occurring most often with Grave's disease
 - o Also acute event □ infection, trauma, emotional stress, DKA, and digitalis toxicity

- o Can also occur following a surgical procedure or a thyroidectomy as a result of manipulation of the gland during surgery
- Manifestations
 - o Hyperthermia/hyperpyrexia (104-106°F), HTN, delirium/agitation, vomiting, abd pain, tachydysrhythmias, chest pain, dyspnea, and palpitations
 - o Cardiac manifestations are predominant
 - o Low TSH and high free T4 and/or T3 concentrations
- Pharmacologic treatment
 - o Beta-blockers
 - o Thionamide
 - o An iodine solution
 - o An iodinated radiocontrast agent
 - o Glucocorticoids
- Nursing interventions
 - o Maintain a patent airway
 - o Provide continuous cardiac monitoring for dysrhythmias
 - o Administer acetaminophen to decrease temperature → NO aspirin

Diabetes mellitus

- Diagnostic labs and values pertinent to each

Diagnostic criteria for diabetes include 2 findings (on separate days) of at least 1 of the following:

Manifestations of diabetes plus casual blood glucose concentration >200 mg/dL (w/ regard to time since last meal)

Fasting blood glucose >126 mg/dL (fasting = no caloric intake x 8 hrs)

2-hr glucose >200 mg/dL w/ oral glucose tolerance test

Glycosylated hemoglobin (A1C) >6.5%

Need two unless high a1c → then will start treatment now

Hypoglycemia (Less than 70 mg/dL. Severe is considered less than 40 mg/dL)

- Manifestations
 - Mild → hunger, nervousness, palpitations, sweating, tachycardia, tremor
 - Moderate → confusion, double vision, drowsiness, emotional changes, HA, impaired coordination, inability to concentrate, irrational or combative behavior, lightheadedness, numbness of the lips and tongues, slurred speech
 - Severe → difficulty arousing, disoriented behavior, loss of consciousness, seizures
- Interventions

Commercially prepared glucose tablets

6-10 Life Savers or hard candy

4 tsp of sugar

4 sugar cubes

1 tbsp of honey or syrup

½ cup of fruit juice or regular (nondiet) soft drink

8 oz of low fat milk

6 saltine crackers

3 graham crackers

Repeat admin if needed and recheck blood glucose in 15 min

Do not attempt to put anything in mouth if unconscious → an injection of glucagon is administered subcutaneously or intramuscularly. In the hospital or emergency department, the client may be treated with an IV injection of 25-50mL of 50% dextrose in water

DKA

- Manifestations

Polyuria, polydipsia, and marked fatigue

Blurred vision, weakness, and headache

Orthostatic hypotension

Frank hypotension with a weak, rapid pulse

GI symptoms such as anorexia, N/V, and abdominal pain

Acetone breath (a fruity odor)

Hyperventilation (with very deep, but not labored, respirations) may occur □

Kussmaul respirations

Pt may be alert, lethargic, or comatose

Blood glucose >300

- Lab findings

Ketoacidosis is reflected in low serum bicarbonate, low pH; low PCO₂ reflects respiratory compensation (Kussmaul's respirations)

Ketone bodies in blood and urine

Electrolytes vary according to degree of dehydration; increase in creatinine, Hct, BUN

- Treatment

Rehydration

Restoring electrolytes

Reverse acidosis

Initial fluid of choice is 0.9% NS □ rate of infusion dependent on clinical state of patient

If hypernatremic □ 0.45% saline in order to provide electrolyte free water

When BG reaches 200-300 or less □ change to D5W to prevent decline in blood glucose level and so that insulin can be continued to achieve ketone clearance

Monitoring of fluid volume status involves frequent measurements of VS, lung assessment, and monitoring of intake and output

- Insulin Administration

Regular insulin at a slow, continuous rate, to fix potassium, hourly blood glucose must be measured

Even if blood glucose levels are decreasing and returning to normal, the insulin drip must not be stopped until subcutaneous insulin therapy has been started

HHS

- Treatment

Insulin not as important b/c no ketosis to correct. Nevertheless, insulin is usually administered at a continuous low rate to treat hyperglycemia, and replacement IV fluids with dextrose are administered (as in DKA) after the glucose level has decreased to the range of 250 to 300 mg/dL

Pancreatitis

- Manifestations

Classic presentation → severe, constant, knife-like pain (LUQ, mid-epigastric, and/or radiating to back)

- o N/V
- o Weight loss
- o PHYSICAL ASSESSMENT FINDINGS:
- o Turner's sign → flank
- o Cullen's sign → bellybutton
- o Generalized jaundice
- o Absent or decreased bowel sounds

- o Warm, moist skin
- o Fruity breath

- Lab findings
 - Increased amylase and lipase, increased WBC, increased liver enzymes
- Pain-relief interventions
 - Position the client for comfort (fetal, side-lying, HOB elevated, sitting up or leaning forward)
 - Bed rest
 - NPO, antiemetics, NG tube, Opioids

EGD

- Client education pre-procedure
 - No eating or drinking 6-12 hours prior

- o Nursing interventions

Assess gag reflex after

- o NPO 6 – 12 hrs pre EGD
- o Bloody sputum, sore throat
- o May be awake – twilight drug (propofol/ versed)
- o Make sure to educate PT before b/c meds will make them groggy

GI bleeds

- o Priority assessment

Assess vital signs, monitor pt progress and assess for shock

AKI

- Causes

Pre renal: Occurs as a result of volume depletion and prolonged reduction of **blood flow to the kidneys**, which leads to ischemia of the nephrons; occurs before damage

to the kidney; early intervention restoring fluid volume deficit can reverse AKI and prevent CKD

Intra Renal: Occurs as a result of **direct damage** to the kidney from lack of oxygen (acute tubular necrosis)

Post Renal: Occurs as a result of bilateral obstruction of **structures leaving the kidney**

- Lab findings
 - o Serum Cr gradually increases 1-2 mg/dL every 24-48 hr, or 1-6 mg/dL in 1 week or less
 - o BUN can increase 80 to 100mg/dL within 1 week
 - o Urine specific gravity varies in postrenal type;
 - o can be elevated up to 1.030 in prerenal type
 - o diluted as low as 1.000 in intrarenal type
 - o Serum electrolytes:
 - o sodium can be decreased (prerenal azotemia) or increased (Intrarenal azotemia)
 - o hyperkalemia, hyperphosphatemia, hypocalcemia
 - o Hct: decreased
 - o UA: presence of sediment (RBS, casts)
 - o ABG: metabolic acidosis

• CKD

- o Dietary restrictions with examples of each
 - o Control protein intake based on the client's stage of CKD and type of dialysis prescribed
 - o Restrict dietary Na⁺, K⁺, Ph⁻, and Mg⁺
 - o Provide a diet that is high in carbohydrates and moderate in fat
 - o Restrict intake of fluids (based on urinary output)
 - o Limit OTC NSAIDs, salt, alcohol, smoking
- Lab findings
 - o UA: hematuria, proteinuria, and decrease in specific gravity
 - o Serum creatinine: gradual increase over months to years
 - o BUN: gradual increase with elevated serum Cr over months to years
 - o Serum electrolytes: Decreased Na⁺ (dilutional) and calcium; increased K⁺, Ph⁻, Mg⁺
 - o CBC: decreased Hgb and Hct from anemia secondary to loss of erythropoietin in CKD

o Nursing interventions

- Report & monitor irregular findings
- Assess and monitor vascular access or peritoneal dialysis insertion site
- Obtain a detailed medication and herb history to determine the client's risk for continued kidney injury
- Control protein intake based on the client's stage of CKD and type of dialysis prescribed
- Restrict dietary Na+, K+, Ph-, and Mg+
- Provide a diet that is high in carbohydrates, moderate in fat, low in protein/ fluids
- Restrict intake of fluids (based on urinary output)
- Adhere to meticulous cleaning of areas on skin not intact and access sites to control infections
- Balance the client's activities and rest
- Prepare the client for hemodialysis, peritoneal dialysis, and hemofiltration if indicated
- Provide skin care in order to increase comfort and prevent breakdown
- Provide emotional support to the client and family
- Encourage the client to ask questions and discuss fears
- Administer medications as prescribed

Peritoneal dialysis

- What is it, how does the system work

Involves instillation of hypertonic dialysate solution into the peritoneal cavity and subsequent dwell times; drain the dialysate solution that includes the waste productions; the peritoneum serves as the filtration membrane

ESRD

- Manifestations

End-stage kidney disease exists when 90% of the functioning nephrons are destroyed and are no longer able to maintain fluid, electrolyte, and acid-base homeostasis

Dialysis or kidney transplantation can maintain life, but neither is a cure for CKD

GFR <15

Kidney biopsy

Nursing interventions

- o Clients receive sedation and ongoing monitoring
- o Pre-procedure
- o Obtain informed consent
- o Obtain urine specimen
- o Review coagulation studies
- o NPO for 4-6 hrs
- o Post-procedure
- o Monitor VS following sedation
- o Assess dressings and UO (hematuria)
- o Review Hgb and Hct values
- o Administer prn pain medications

Kidney transplants

- o Contraindications
 - o Age <2
 - o Age >70
 - o Advanced, untreatable cardiac disease
 - o Chemical dependency
 - o Chronic infections or system diseases
 - o Coagulopathies and certain immune diseases
 - o Morbid obesity
 - o DM
 - o COPD
 - o Untreated GI diseases, such as peptic ulcer disease
- o Organ rejection manifestations
 - **Hyperacute: w/in 48hr after surgery**
 - o Fever, HTN, pain at transplant site
 - **Acute: 1wk-2yrs after surgery**
 - o Oliguria, anuria, low-grade fever, HTN, tenderness of new kidney, lethargy, azotemia, fluid retention
 - **Chronic: gradual over months-yrs**
 - o fever, increased BP, swelling/tenderness over new kidney, Oliguria, gradual return of azotemia, fluid retention/ edema/ wt gain, electrolyte imbalance, fatigue,

Dialysis types

- **Peritoneal**

- o tX for choice for *older adults*
- o Involves instillation of hypertonic dialysate solution into the peritoneal cavity and subsequent dwell times; drain the dialysate solution that includes the waste productions; the peritoneum serves as the filtration membrane
- o Client should have an intact peritoneal membrane without adhesions from infection or multiple surgeries

- **Hemodialysis**

- o Shunts blood from the body through a dialyzer and back into circulation
- o Requires vascular access
- o Indications:
- o Renal insufficiency, AKI, CKD