Adrenal Insufficiency, primary (a disorder in which the adrenal cortex does not produce enough cortisol or aldosterone, which is caused directly by adrenal inflammation)

Assessment

Look:
- Does the patient appear:
  - Lethargic?
  - Irritable?
  - To have lost weight?
  - Depressed?
  - Weak?
  - Bronzed/dark colored (hyperpigmented)?
  - Thinner?
  - Sweaty?
  - In pain (back, lower legs, abdomen, head)?
  - Syncope?
  - Dry skin?
  - Cold?
  - Forgetful?

Listen:
- Fatigue
- Weakness
- Feeling cold all the time
- Loss of appetite
- Abdominal pain
- Nausea/vomiting
- Diarrhea
- Fainting/dizziness when standing
- Mood change (irritable/depressed)
- Craving salty food
- Recurrent or severe headaches
- Irregular menstruation (women)
- Loss of libido
- Skin changes: dry, darkening
- Fever
- Persistent or worsening forgetfulness

Recognise:
- AM cortisol, ACTH stimulation test
- Primary vs secondary adrenal insufficiency (AI)
  - Primary AI: A low morning cortisol (<5 mcg/dL) plus a high ACTH with or without abnormal electrolyte levels and symptoms (other criteria: 30–60-minute cortisol <18 mcg/dL after ACTH stimulation with above findings)
  - Secondary AI: low morning cortisol plus low or delayed ACTH levels (on ACTH stimulation test)
- High plasma renin activity (primary) vs normal (secondary)
- Hypokalemia, hypocalcemia, hypoglycemia, hypervolemia
- Orthostatic hypotension
- Imaging of adrenal and pituitary glands consistent with primary vs secondary adrenal insufficiency
- Fever, which may precipitate adrenal crisis
- Symptoms and laboratory findings of adrenal crisis

Management

Grading Toxicty

Primary Adrenal Insufficiency

Grade 1 (Mild)  
- Asymptomatic, clinical or diagnostic observations only

Grade 2 (Moderate)  
- Modest symptoms

Grade 3 (Severe)  
- Hospitalization indicated

Grade 4 (Life-Threatening)  
- Urgent intervention indicated

Grade 5 (Death)

Implementation:
- CAUTION: Start corticosteroid first before any other hormone replacement to avoid adrenal crisis
- Monitor clinical chemistries prior to each dose and check ACTH as indicated based on labs or symptoms
- Consider endocrinology referral
- Rule out other potential causes of primary adrenal insufficiency including infection (TB), adrenal metastases, amyloidosis, medications (antifungals), or inadequate tapering of corticosteroids
- Provide patient/caregiver education regarding:
  - Understanding that the corticosteroids are for physiologic replacement and will be continued indefinitely
  - Importance of wearing a medical alert bracelet and carrying corticosteroids at all times in case of adrenal crisis (as well as knowledge of how to administer)

*Administering Corticosteroids:

Steroid taper instructions/calendar as a guide but not an absolute
- Taper should consider patient's current symptom profile
- Close follow-up in person or by phone, based on individual need & symptomatology
- Steroids cause indigestion: provide antacid therapy daily as gastric ulcer prevention while on steroids (e.g., proton pump inhibitor or H2 blocker if prednisone dosage >20 mg/day)
- Review steroid medication side effects: mood changes (angry, reactive, hyperaware, euphoric, manic), increased appetite, interrupted sleep, oral thrush, fluid retention
- Be alert to recurring symptoms as steroids taper down & report them (taper may need to be adjusted)

Long-term high-dose steroids:
- Consider antimicrobial prophylaxis
- Consider additional antimicrobial and antifungal coverage
- Avoid alcohol/alcohol/methamphetamine or other hepatotoxins
- If extended steroid use, risk for osteoporosis: initiate calcium and vitamin D supplements

RED FLAGS:
Adrenal crisis:
- Sudden severe pain in the lower back, abdomen, and legs
- Severe weakness
- Severe vomiting and diarrhea
- Severe hypotension
- Severe dehydration
- Confusion, delirium
- Loss of consciousness

ACTH = adrenocorticotropic hormone; po = by mouth

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