

Chapter 45. Adrenal Gland Disorders, Self-Assessment Questions

1. Which of the following is true regarding the hypothalamic-pituitary-adrenal (HPA) axis?
 - A. Corticotropin-releasing hormone (CRH) is secreted by the hypothalamus to stimulate adrenocorticotrophic hormone (ACTH) secretion from the anterior pituitary.
 - B. The adrenal cortex stimulates the anterior pituitary to secrete cortisol.
 - C. Cortisol exerts positive feedback on the hypothalamus to increase secretion of CRH.
 - D. The adrenal medulla produces testosterone and estrogen under the control of the pituitary.
 - E. Aldosterone is produced in the pituitary.

2. Which of the following is the most common etiology of primary adrenal insufficiency?
 - A. An autoimmune process
 - B. Chronic glucocorticoid administration at supraphysiologic dose
 - C. Infection
 - D. Adrenalectomy
 - E. Megestrol acetate

3. The clinical presentation of primary adrenal insufficiency differs from that of secondary or tertiary adrenal insufficiency in the following way(s):
 - A. Hyperpigmentation is commonly seen in secondary and tertiary adrenal insufficiency.
 - B. Hyperkalemia is more commonly seen in primary adrenal insufficiency.
 - C. Decreased aldosterone concentrations is most often seen in primary adrenal insufficiency.

D. B and C

E. A, B, and C

4. A 43-year-old woman comes to the pharmacy asking for help selecting “iron pills.” She states that she has been feeling gradually more “tired and weak over the past couple of years.” Upon further questioning, she also complains of recurring dizziness, nausea, and diarrhea, and a 10-pound (4.5 kg) weight loss over the past year. She fills her prescriptions at the pharmacy, and a review of the medication profile reveals that fluticasone/salmeterol DPI 500/50 mcg one inhalation bid, albuterol MDI two puffs every 4 hours as needed, HCTZ 25 mg daily, and pantoprazole 40 mg daily have been prescribed. She also has a history of asthma exacerbations requiring hospitalization and prednisone taper treatment one or two times per year. Which of the following would be the most appropriate step to take?

A. Refer for medical evaluation for possible hypocortisolism.

B. Refer for medical evaluation for possible hypercortisolism.

C. Help her select a B-complex vitamin product to treat fatigue.

D. Help her select an iron-containing supplement to treat fatigue.

E. Refer for medical evaluation of anemia.

5. A 48-year-old man is diagnosed with chronic adrenal insufficiency. Which of the following patient education recommendations should be addressed to avoid an acute adrenal crisis?

A. Always carry identification (eg, medical alert bracelet) listing the diagnosis.

B. Take corticosteroid supplementation as directed and do not abruptly stop treatment.

C. Advise all treating health care professionals that he has a diagnosis of chronic adrenal insufficiency.

- D. Supplemental dosing of glucocorticoid as may be required during an acute illness, including infections, surgery, or even fever.
- E. All of the above
6. Which of the following statements regarding the treatment of chronic adrenal insufficiency with glucocorticoid supplementation is *false*?
- A. Give glucocorticoid replacement at a dose equal to approximately 15 to 25 mg/day of hydrocortisone.
- B. Give hydrocortisone once daily in the morning to optimize medication adherence.
- C. The dose of the glucocorticoid may need to be increased with concomitant administration of a CYP3A4 inducer.
- D. The dose of the glucocorticoid may need to be decreased with concomitant administration of a CYP3A4 inhibitor.
- E. Patients with secondary or tertiary adrenal insufficiency may need a lower dose of glucocorticoid compared to those with primary adrenal insufficiency.
7. How should the treatment plan for a patient with adrenal insufficiency be monitored?
- A. Monitor for resolution of symptoms of adrenal insufficiency.
- B. Monitor for resolution of the underlying etiology of adrenal insufficiency such as infection.
- C. Monitor for development of signs and symptoms of hypercortisolism.
- D. Monitor for development of mineralocorticoid excess such as hypertension, hypokalemia, and fluid retention.
- E. All of the above
8. Which of the following glucocorticoids possesses the most mineralocorticoid activity?

- A. Methylprednisolone
 - B. Betamethasone
 - C. Hydrocortisone
 - D. Dexamethasone
 - E. Prednisone
9. What is the first step in the management of a patient presenting with clinical manifestations consistent with an acute adrenal crisis?
- A. Perform rapid ACTH stimulation test to confirm adrenal insufficiency.
 - B. Perform testing to distinguish between primary, secondary, and tertiary adrenal insufficiency.
 - C. Perform the metyrapone test to confirm the diagnosis of acute adrenal insufficiency.
 - D. Correct volume depletion and hypoglycemia, and provide glucocorticoid replacement.
 - E. Any of the above would be a reasonable first step.
10. Which of the following is the most common etiology of Cushing syndrome?
- A. Exogenous glucocorticoid administration
 - B. Adrenal adenoma
 - C. Adrenal carcinoma
 - D. Ectopic ACTH syndrome
 - E. ACTH-secreting pituitary tumor
11. Which of the following strategies can be utilized to prevent the development of Cushing syndrome in patients requiring treatment with glucocorticoid therapy?
- A. Give the highest effective dose for the longest duration possible.
 - B. If possible, administer glucocorticoid via routes that minimize systemic exposure.

- C. Avoid concurrent administration of medications that can induce glucocorticoid metabolism.
 - D. If possible, administer glucocorticoid with CYP3A4 inhibitors.
 - E. If possible, calculate the total 24-hour dose of the glucocorticoid and administer every other day instead of daily.
12. A complication of all treatments for Cushing syndrome is:
- A. Risk of hypocortisolism and adrenal insufficiency
 - B. Hepatic impairment
 - C. Renal impairment
 - D. Less than 50% remission rate
 - E. Hyperlipidemia
13. Which of the following drug treatment of Cushing syndrome can cause hyperlipidemia?
- A. Ketoconazole
 - B. Mitotane
 - C. Etomidate
 - D. Metyrapone
 - E. All of the above
14. Which of the following treatment options for Cushing syndrome may also be useful in the diagnosis of adrenal insufficiency?
- A. Etomidate
 - B. Ketoconazole
 - C. Mitotane
 - D. Metyrapone

E. Octreotide

15. Which of the following statements regarding ketoconazole administration is true?

- A. It is a strong CYP450 3A4 inducer.
- B. It stimulates adrenal steroidogenesis.
- C. It requires gastric acidity for dissolution and absorption.
- D. It can increase testosterone synthesis.
- E. Its onset of clinical improvement is much slower than mitotane.

ANSWERS

1. A

2. A

3. D

4. A

5. E

6. B

7. E

8. C

9. D

10. A

11. B

12. A

13. B

14. D

15. C