EMERGENCY MEDICINE PRACTICE
POINTS & PEARLS
A Quick-Read Review Of Key Points & Clinical Pearls, September 2017

Recognizing and Managing Adrenal Disorders in the Emergency Department

Points

- Primary adrenal insufficiency (PAI), or Addison disease, is characterized by a deficiency of glucocorticoid and mineralocorticoid production by the adrenal glands.
- Secondary adrenal insufficiency (SAI) is characterized by a lack of glucocorticoid production due to a lack of hormonal stimulation, most commonly from withdrawal of exogenous glucocorticoid use.
- Congenital adrenal hyperplasia (CAH) is a group of autosomal recessive disorders and should be in the differential of any infant with poor feeding or vomiting, ambiguous genitalia, or hyperpigmented skin.
- Even in patients with known adrenal insufficiency, adrenal crisis can be difficult to prevent and treat in a timely manner.
- Adrenal crisis is caused by a lack of cortisol response such that the body cannot maintain vascular tone. Signs and symptoms include hypotension, nausea/vomiting, severe fatigue, fever, hyponatremia, hyperkalemia, and hypoglycemia.
- Diagnosis of adrenal insufficiency or crisis relies on obtaining a history of any prior adrenal insufficiency or autoimmune disorders and a detailed medication list.
- Hyperpigmentation is the most characteristic finding in PAI, due to excess ACTH production, which stimulates melanin production.
- Treatment of adrenal crisis consists of early corticosteroid administration, IV fluid resuscitation, and electrolyte/glucose management.
- Hydrocortisone has a favorable glucocorticoid and mineralocorticoid effect and is the preferred agent for treating acute adrenal insufficiency or adrenal crisis in children and adults.
- Though etomidate has been suspected to cause adrenal suppression, there remains equipoise on this subject. Clinicians can continue to make a patient-by-patient decision on the induction agent to use. Ketamine may be a good alternative.
- Critical-illness-related corticosteroid insufficiency (CIRCI) is a multifactorial adrenal insufficiency during times of extreme stress on the body.
- It is estimated that 10% to 20% of critically ill patients have some degree of adrenal insufficiency.

Pearls

- PAI is classically associated with hyponatremia, hyperkalemia, and hypoglycemia. SAI does not present with hyperkalemia, due to intact mineralocorticoid activity.
- For vasopressor-refractory septic shock, administer hydrocortisone 100 mg IV, followed by 50 mg IV every 6 hours.
- Confirmatory laboratory testing for adrenal insufficiency has no role in the ED. Focus on administering corticosteroids for suspected cases, managing the underlying causes of adrenal crisis, and correcting any electrolyte disorders and/or hypoglycemia.
- Although neonatal screening for CAH is required in all states in the United States, approximately 30% of cases are missed.

- In the most recent Surviving Sepsis guidelines, IV hydrocortisone is recommended at a daily dose of 200 mg for the subset of patients with vasopressor-refractory shock.
- The use of corticosteroids in cardiac arrest is not recommended at this time, based on current evidence.
- Patients with adrenal insufficiency that has progressed to shock or metabolic abnormalities will require admission.

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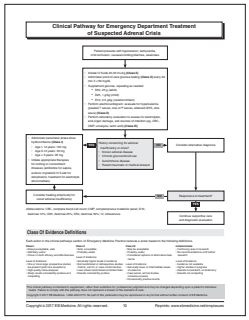
Table 8. Hydrocortisone for Adrenal Crisis Prophylaxis During Illness[7,19]

Illness	Recommended Dosing
Fever > 38°C	Double daily dosing orally for duration of illness, and then 1-2 days after
Fever > 39°C	Triple daily dosing orally for duration of illness, and then 2 days after
Gastroenteritis with vomiting and/or diarrhea	100 mg hydrocortisone SC or IM early, then repeat in 6-12 hr
Severe infection (eg, pneumonia with altered mental status)	100 mg hydrocortisone SC or IM early, then repeat in 6-12 hr until recovery

Abbreviations: IM, intramuscular; SC, subcutaneous.
Adapted with permission from Allolio B. Extensive expertise in endocrinology. Adrenal crisis. *European Journal of Endocrinology*. 2015;173(3):R115-R124.

Access the issue by scanning the QR code with a smartphone or tablet or go to: www.ebmedicine.net/adrenal.


Clinical Pathway for Emergency Department Treatment of Suspected Adrenal Crisis

First Responders

What changes do you anticipate making in your practice as a result of this activity?

- Give stress-doses of IV hydrocortisone to septic patients with hypotension refractory to fluids and vasopressors.
- I will screen for PAI during evaluation of septic patients.
- I will be more alert to adrenal insufficiency as a cause of refractory hyponatremia/hypotension.
- Lower the threshold to consider endocrine pathology.

Most Important References

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