

Adrenal Insufficiency

Adrenal insufficiency is a condition in which the adrenal glands, located above the kidneys, do not produce adequate amounts of **steroid hormones** (chemicals produced by the body that regulate the function of other organs). There are many causes of adrenal insufficiency. Certain diseases cause permanent adrenal insufficiency while other conditions cause temporary adrenal insufficiency. Some medications can also result in temporary adrenal insufficiency. Adrenal insufficiency can also occur when the **hypothalamus** or the **pituitary gland**, located at the base of the brain, does not make adequate amounts of the hormones that assist in regulating adrenal function. The November 16, 2005, issue of *JAMA* includes an article about adrenal insufficiency.

SYMPTOMS OF ADRENAL INSUFFICIENCY

Typical symptoms of adrenal insufficiency include unusual tiredness and weakness, unintended weight loss, nausea, diarrhea, dizziness, loss of appetite, joint pain and belly pain, salt craving, and darkening of the skin. When levels of ACTH or CRH are affected, people can feel well most of the time but have low blood pressure or low blood sugar during times of extreme stress. To diagnose adrenal insufficiency, doctors need to determine blood levels of the steroid hormones and then perform other tests to determine the cause of any deficiency.

TREATMENT OF ADRENAL INSUFFICIENCY

If adrenal insufficiency is untreated, serious illness or even death can occur. **Synthetic** (manufactured) glucocorticoids that replace the deficient adrenal steroid hormones are the main treatment. They must be taken daily and as directed to keep the body in balance. Synthetic mineralocorticoid and androgen medications may also be necessary. If you have adrenal insufficiency and are sick or under physical stress, you may need to take glucocorticoids to counter the excess stress on your body. Discuss with your doctor the need for adequate glucocorticoid replacement if you are having surgery, major dental work, or other invasive procedures or if you are sick with a fever, vomiting, or diarrhea.

MEDICAL ALERT BRACELET

During an emergency, medical personnel need to know if you have adrenal insufficiency. It is very important that persons with adrenal insufficiency always wear a medical alert bracelet indicating the need for a lifesaving glucocorticoid injection. You should also carry a list of your current medications and their doses as well as your doctor's name and contact information. If you live in a remote area or are planning travel, your doctor can prescribe an injection kit for emergencies.

Erin Brender, MD, Writer

Cassio Lynn, MA, Illustrator

Richard M. Glass, MD, Editor

The **hypothalamus** area of the brain produces **corticotropin-releasing hormone (CRH)**.

CRH promotes production of **adrenocorticotropic hormone (ACTH)** by the **anterior portion of the pituitary gland**.

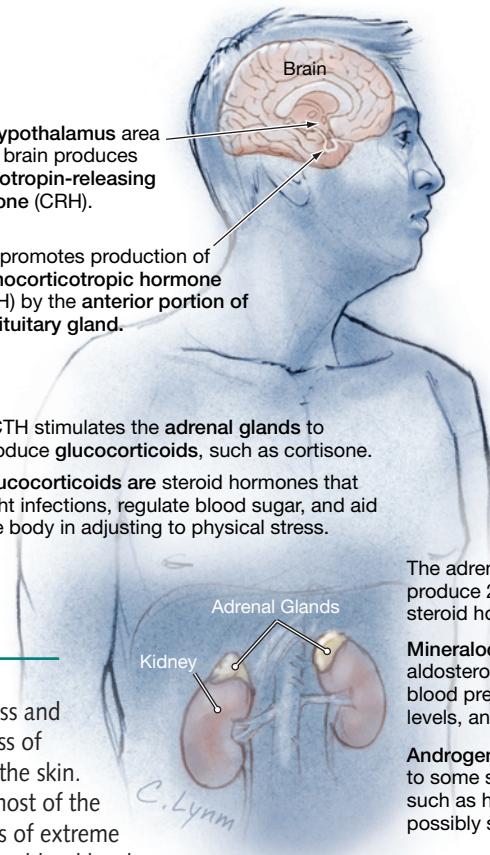
ACTH stimulates the **adrenal glands** to produce **glucocorticoids**, such as **cortisone**.

Glucocorticoids are steroid hormones that fight infections, regulate blood sugar, and aid the body in adjusting to physical stress.

The adrenal glands also produce 2 other types of steroid hormones:

Mineralocorticoids (such as aldosterone), which regulate blood pressure and sodium levels, and

Androgens, which contribute to some sexual characteristics such as hair growth and possibly sex drive in women.



FOR MORE INFORMATION

- National Institutes of Health Clinical Center
www.cc.nih.gov
- National Institute of Diabetes and Digestive and Kidney Diseases
www.niddk.nih.gov
- The Hormone Foundation
800/467-6663
www.hormone.org

INFORM YOURSELF

To find this and previous JAMA Patient Pages, go to the Patient Page link on JAMA's Web site at www.jama.com. Many are available in English and Spanish.

Sources: National Institutes of Health, The Hormone Foundation

The JAMA Patient Page is a public service of JAMA. The information and recommendations appearing on this page are appropriate in most instances, but they are not a substitute for medical diagnosis. For specific information concerning your personal medical condition, JAMA suggests that you consult your physician. This page may be photocopied noncommercially by physicians and other health care professionals to share with patients. To purchase bulk reprints, call 718/946-7424.

