DEPARTMENT OF INTERNAL MEDICINE

SECTION OF ENDOCRINOLOGY

PATIENT EDUCATION

ADRENAL INSUFFICIENCY

Addison’s disease is an endocrine or hormonal disorder that occurs in all age groups and afflicts men and women equally.

Addison’s disease occurs when the adrenal glands (located just above the kidneys) do not produce enough of the hormone cortisol and, in some cases, the hormone aldosterone. The disease is also called adrenal insufficiency, or hypocortisolism.

The cortisol’s most important job is to help the body respond to stress. Among its other vital tasks, cortisol

* Helps maintain BP and CV function
* Helps slow the immune system’s inflammatory response
* Helps balance the effects of insulin in breaking down sugar for energy
* Helps regulate the metabolism of proteins, carbohydrates, and fats

Cortisol, a glucocorticoid, is regulated by the brain’s hypothalamus and the pituitary gland (a bean-sized organ at the base of the brain). One of the pituitary’s main functions is to secrete ACTH, a hormone that stimulates the adrenal glands to produce cortisol. Cortisol then signals the pituitary to lower secretion of ACTH.

Aldosterone belongs to a class of hormones called mineralocorticoids, produced by the adrenal glands. It helps maintain blood pressure and water and salt balance in the body by helping the kidney retain sodium and excrete potassium. When aldosterone production falls too low, the kidneys are not able to regulate salt and water balance, causing blood volume and blood pressure to drop.

CAUSES

Primary Adrenal Insufficiency (disorder of the adrenal glands themselves):

* Autoimmune disorder (caused by the destruction of the adrenal cortex by the body’s own immune system)
* Polyendocrine Deficiency Syndrome (other glands are also affected)
* Tuberculosis (an infection which can destroy the adrenal glands)
* Chronic infections, mainly fungal
* Cancer cells spreading from other parts of the body to the adrenal glands
* Amyloidosis
* Surgical removal of the adrenal glands

Secondary Adrenal Insufficiency:

* Lack of ACTH (hypopituitarism)
* Chronic steroid intake (blocks the release of both CRH (corticotrophin-releasing hormone) and ACTH)
* Surgical removal of benign, or noncancerous, ACTH-producing tumors of the pituitary gland (Cushing’s Disease)
* Tumors or infection of the pituitary gland
* Loss of blood flow to the pituitary
* Radiation for the treatment of pituitary tumors
* Surgical removal of parts of the hypothalamus or the pituitary gland

SIGNS AND SYMPTOMS

The signs and symptoms of adrenal insufficiency usually begin gradually.

* Chronic, worsening fatigue
* Muscle weakness
* Loss of appetite
* Weight loss
* Nausea, vomiting, diarrhea
* Low blood pressure that falls further when standing causing dizziness or fainting
* Skin changes in Addison’s disease (primary adrenal insufficiency), with areas of hyperpigmentation, or dark tanning, most visible on scars, skin folds, pressure points such as the elbows, knees, knuckles, toes, lips, and mucous membranes
* Craving for salty food (in primary adrenal insufficiency)
* Hypoglycemia
* Irregular menstrual periods

Symptoms of acute adrenal insufficiency or adrenal crisis (symptoms suddenly become worse precipitated by a stressful event like an illness or an accident):

* Sudden penetrating pain in the lower back, abdomen, or legs
* Severe vomiting and diarrhea
* Dehydration
* Low blood pressure
* Loss of consciousness

Left untreated, an adrenal crisis can be fatal.

DIAGNOSIS

* ACTH Stimulation Test
* CRH Stimulation Test
* Further tests like electrolytes, abdominal x-ray/CT, pituitary CT, tests of pituitary function, etc. are needed to determine etiology of adrenal insufficiency

TREATMENT

* Replacing or substituting the hormones that the adrenal glands are not making like replacing hydrocortisone or prednisosne for cortisol and fludrocortisone for aldosterone
* In an adrenal crisis, emergency therapy includes hydrocortisone IV, dextrose, IV saline

Surgery:

Patients with chronic adrenal insufficiency who need surgery with general anesthesia are treated with injections of hydrocortisone and saline.

Patient Education:

A person who has adrenal insufficiency should always carry identification stating his or her condition in case of an emergency. He should also know how to increase medication during periods of stress or mild upper respiratory tract infections. Immediate medical attention is needed when severe infections, vomiting, or diarrhea occur. These conditions can precipitate an adrenal crisis.