What Causes Adrenal Insufficiency?

The adrenal glands are located on top of the kidney and make three types of hormones called corticosteroids (often referred to as cortisol), mineralocorticoids (main hormone is aldosterone), and weak male hormones or androgens. Cortisol is a hormone that helps maintain blood vessel tone and blood sugar levels and is especially important in times of stress. Aldosterone controls salt balance in the body. Androgens are sex hormones that are responsible for pubic and underarm hair. The production of cortisol by the adrenal glands is controlled by the pituitary gland hormone called adrenocorticotropic hormone (abbreviated as ACTH), which in turn is controlled by a brain hormone called corticotropin-releasing hormone (abbreviated as CRH). There are, therefore, two kinds of adrenal insufficiency: one is called primary adrenal insufficiency, because the adrenal gland is damaged and cannot produce cortisol (the pituitary hormones work well) and aldosterone; the other is called central adrenal insufficiency, because the brain hormones ACTH or CRH are not present to stimulate the adrenal glands to produce cortisol.

A child can be born with adrenal insufficiency (congenital adrenal insufficiency) or can become adrenally insufficient anytime after birth for many reasons (acquired adrenal insufficiency).

What is Adrenal Insufficiency?

Adrenal insufficiency is uncommon except for the kind associated with prolonged medical treatment with steroids.

How is Adrenal Insufficiency Diagnosed?

The most common way to diagnose primary adrenal deficiency is to obtain a blood sample early in the morning to check a cortisol level and an ACTH level. In primary adrenal insufficiency, cortisol levels will be low with an elevated ACTH level. In secondary adrenal insufficiency, cortisol level is low with an ACTH level which is low or normal but not high.

How is Adrenal Insufficiency Treated?

Treatment can be accomplished by giving hydrocortisone or other similar medications to replace the cortisol production that is impaired. It is important to know that at time of stress, such as times when a child may have fever or is vomiting, the hydrocortisone does need to be increased, tripled or more, because that is what the adrenals would do on their own if they were functioning properly. If a child is not able to keep down the hydrocortisone because of vomiting or illness, and injection of hydrocortisone works best in emergencies. With appropriate treatment, children with adrenal insufficiency can lead a normal life and have a normal life span.

Can Adrenal Insufficiency be Prevented?

Adrenal insufficiency cannot be prevented unless it is caused by steroid treatment. Doctors should be careful in prescribing long-term steroids. When steroid therapy is no longer needed, doctors have to be careful to set up a plan whereby steroids are tapered so that the brain can “wake up” and resume stimulating the adrenals on its own.

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