Adrenal Hormone Imbalance - A Signal of Deeper Stress!

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Adrenal hormone assessment has become a popular avenue for health practitioners to evaluate hormone imbalances, symptoms of fatigue, lethargy, and other issues of ill health. It is now recognized that many health conditions such as chronic fatigue, PMS, insomnia, frequent illness, etc. are related to imbalanced adrenal hormone output and reserve. The adrenal gland has many functions. It helps to regulate electrolyte balance, blood pressure, energy production, immune system control, inflammation, blood sugar balance, and sleep regulation. Cortisol is a major component of adrenal hormone output and its ability to impact the majority of body systems has made it an ideal hormone to measure as an indicator of adrenal gland function. Generally, high cortisol levels indicate an overactive adrenal gland while low cortisol levels are indicative of an underactive adrenal gland.

DHEA (dihydroepiandrosterone) is another adrenal hormone that produces testosterone and the 3 estrogens (estradiol, estrone, and estriol). A balance between DHEA and cortisol is essential to maintain a balance of adrenal hormone production, and imbalances indicate that the body is compensating for underlying stress. This stress is not always emotional or mentally induced, but instead could indicate poor blood sugar control, digestive inflammation, chronic infections, poor diet and environmental toxins. The deviation from normal is a warning that your body is not handling stress very effectively.

For many individuals, this adrenal hormone imbalance can be quite severe. Examples of this are women with irregular menses, PMS, early menopause, infertility, or other female hormone related health issues. The reason for these problems is the lack of adequate sex hormone production, ie. estrogen, testosterone, progesterone due to the need to keep up with the increased demand of adrenal hormones. The process is driven by stress and the body compensates by using hormone precursors for cortisol production rather than sex hormone production.

All sex hormone, adrenal hormone, and kidney hormone (aldosterone) production comes from cholesterol. Cholesterol, an essential chemical in our body, provides the necessary cofactors for a hormone called Pregnenolone. Pregnenolone converts to DHEA. DHEA is then converted to either testosterone, or the 3 different estrogens (estradiol, estriol, or estrone) depending on the body's demand. Some of this pregnenelone is formed into progesterone which, as needed, will convert to cortisol. Cortisol is then free to carry out its biological activities as discussed above. When estrogen, testosterone, and progesterone are being produced in normal amounts, this indicates a healthy and balanced hormonal system. However, in our fast-paced, stress filled society this normal scenario very rarely occurs leading the way for hormonal imbalances and a predisposition to ill health.

When our body is placed in a stressful situation it responds by producing various stress hormones such as adrenaline (epinephrine, norepinephrine) and cortisol. This demand for stress hormone production is a normal response to help prepare our body for action, achieve the necessary physiologic function, and protect our body from damage. In an acute event, such as a traumatic injury, stress hormones are mobilized to stimulate muscular activity, blood sugar for brain and muscle fuel, inflammation control, and increase in heart and lung function necessary for dealing with the situation at hand. After the stressful event has subsided, these hormones should return to the level they were prior to the stressful event. Unfortunately, our lives have become an ongoing stimulus of perceived stress leading to persistent demands on our adrenal reserves for ongoing energy production.

When our body is under stress, we tend to produce more and more cortisol. Over time we enter a phase called "pregnenolone steal" in which our body is stealing pregnenolone away from its normal hormone production in preference of cortisol. Eventually the stimulus on our adrenal gland for stress hormone production (cortisol) is so great that our adrenal gland begins to weaken. Over time, this scenario leads to adrenal fatigue and eventually adrenal exhaustion. In the adrenal exhaustion phase we have lost our ability to compensate for acute stressful events and we are left feeling fatigued, lethargic, and susceptible to chronic illness.

Chronic stress comes in many patterns and phases depending on an individual's lifestyle, diet, sleep habits, genetic and hereditary factors. We all have stress, but the people that deal with stress in a positive emotional and mentally balanced fashion remain the healthiest with regard to their adrenal hormone function. However, stress is a multi-factorial issue and its causes are a multitude of varying emotional, dietary, and lifestyle factors. Injuries, chemical toxicity, disturbed sleeping patterns, drugs, infections, electromagnetic exposure, psychological stressors such as doubt, lack of self worth, fear, and anxiety all lead to demands on your adrenal reserves. Early Menopause, PMS, irregular menses, emotional lability, chronic pain, insomnia, immune system dysfunction, osteoporosis, heart disease, and cancer can all be attributed to a breakdown of our adrenal reserves.

If you adrenals are weak and overstressed, then the cause for this stress needs to be determined. Many times this cause is multi-factorial and indicates the need for further diagnostic testing and lifestyle modification. Just like the engine warning light in your car, the adrenal glands and its corresponding hormonal production do not exist in isolation from the rest of our

body. Its imbalanced function is a signal of deeper stress and maintaining normal output and production is imperative for a happy and healthy life.