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FATIGUE and ADRENAL DYSFUNCTION

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Have you ever been completely exhausted, then all of a sudden felt a burst of energy? Maybe this occurred as a result of an unexpected deadline that was imposed by your boss, or you have just had a car accident. This “adrenaline rush” is primarily a result of adrenaline or epinephrine, an adrenal hormone. The adrenal glands are a pair of glands that lie on top of each kidney. Besides adrenaline, they produce several other hormones, such as cortisol and DHEA.

A recent episode of the television program “Survivor in Africa” showed a lion in Africa growling at the contestants. When they heard the Lion, their adrenal glands secreted both adrenaline and cortisol as a “fight or flight” survival mechanism. These hormones “prime” the body in the event of an attack. Although most people in North America are not secreting massive amounts of adrenaline and cortisol in response to a lion chasing them down Portage Avenue, they are, however, exposed to daily, unrelenting stress or an accumulation of recent stressors.

Everyone encounters stress in their lives. However, when the intensity and duration of stress surpasses the body’s ability to cope, it is reasonable to assume that something will start breaking down. If you race a horse too frequently, if you keep running and whipping her when she’s tired, very soon she won’t be able to perform at all. The same scenario can occur in humans. Many North Americans are extremely fatigued, they will drag themselves out of bed, go to work, only to collapse at the end of the day.

Stress, which can be divided into physical, metabolic and psychological, can adversely affect the functioning of the adrenal gland. Common physical stressors include: burns, intense exercise, surgery, pain, and lack of sleep. Metabolic stressors may include: hypoglycemia, infection, toxin exposure, and chronic inflammation. Some psychological stress is more detrimental to the adrenal glands than others. Experiencing a divorce, a death of a loved one, having a new mortgage or large loan, change in work, and anticipating stressful situations (ie. college exams, surgery), all can negatively affect adrenal function. Excessive simple carbohydrate (white sugar, sweeteners) and insufficient protein can compound this onslaught to the adrenal glands.

Although fatigue is a symptom of several diseases, adrenal dysfunction is more likely the cause when other signs and symptoms are present. Symptoms of adrenal dysfunction include:

- sleep disturbances
- low sex drive
- food and environmental allergies
- nervousness
- depression
- dysglycemia (poor blood glucose control)
- low body temperature
- low blood pressure
- slow recovery from any mental, emotional or physical stress.

For optimal functioning, cortisol and DHEA must be kept in balance. High levels of cortisol can decrease DHEA levels leading to a myriad of signs and symptoms. Excessive amounts of cortisol can adversely affect bone and muscle tissue, cardiovascular, thyroid and immune function, weight control, sleeping, glucose regulation and aging. Over time, cortisol secretion may become impaired, resulting in an inability to respond to stress and conditions such as allergies, chronic fatigue, arthritis and menstrual dysfunction.

For many years, scientists assumed that DHEA merely functioned as a substrate or precursor to produce other hormones, such as estrogen and testosterone. We now know that DHEA serves to balance the body's stress response. High levels of DHEA are associated with increased longevity and prevention of heart disease and cancer, suggesting that some of the manifestations of aging may be caused by DHEA deficiency. Animal and laboratory data suggest that therapeutic amounts of DHEA may prevent obesity, diabetes, cancer (breast, colon, and liver), and heart disease; enhance the functioning of the immune system; and prolong life. Evidence exists, using human clinical trials, that DHEA may benefit other conditions, such as autoimmune disease (lupus, rheumatoid arthritis, multiple sclerosis), AIDS, chronic fatigue syndrome, osteoporosis, Alzheimer's diseases, and allergic disorders.

It is first prudent to first identify a severe adrenal dysfunction as manifested by a deficiency (Addison's disease) or an excess (Cushing's disease) of certain adrenal hormones. However, most individuals suffering from an adrenal issue have a functional problem and not a disease process such as Addison's or Cushing's. Obtaining objective evidence in the form of a salivary test for cortisol and DHEA levels can serve to more appropriately treat these functional adrenal issues. Naturopathic doctors will often utilize a test that measures cortisol and DHEA levels throughout the day. Cortisol levels should be highest in the morning and lowest in the evening. This circadian release of cortisol allows us to function optimally throughout the day and allows us to fall asleep at an appropriate time at night.

O.K., we have discovered an adrenal issue, now what? First of all, let's remove the underlying cause of the dysfunction. If, for example, it is unrelenting daily stress, then adopting adaptive strategies such as deep breathing, meditation, prayer, yoga, Pilates, exercise, etc. can help to regulate these adrenal hormones. Simplifying one's life maybe essential to regaining health. Removing the underlying physical, metabolic, mental or emotional stressor is a must. It is recommended to eat a whole-foods diet with minimal sugar, minimal caffeine (adrenal stimulants), minimal alcohol and adequate protein. If applicable, an appropriate diet to regulate blood sugar maybe recommended. If you feel exhausted or depleted after exercise, you're doing too much. Pushing yourself only weakens your adrenal glands even more. Start slow and rebuild with a slow increase in duration and intensity depending on your response. Recent research has suggested that both the adrenal glands and immune system benefit from exposure to natural light.

Various nutrients are essential for the optimal functioning of the adrenal gland. The adrenals have the highest concentration of Vitamin C per gram of any tissue in the body. Vitamin B-5 is involved in the production of metabolic energy (ATP) for the adrenals and elsewhere in the body. Magnesium is an important mineral involved in producing metabolic energy. Urinary excretion of magnesium is increased in high cortisol states, making a magnesium deficiency quite likely. Zinc and vitamin B6, along with the nutrients listed above all play a critical role in the health of the adrenal gland as well as the manufacturing of adrenal hormones. If DHEA is found to be low, DHEA supplementation may be appropriate; however, DHEA is currently not available in Canada. Phosphotidyl serine and tyrosine are sometimes used in states of excessive cortisol release.

Herbal medication can be most useful in restoring the adrenal glands to optimal functioning. The most commonly used botanicals include ginseng, licorice root solid extract, wild yam, maca root, and Rhodiola Rosea. One or more of these botanicals maybe prescribed depending on the underlying adrenal dysfunction.

While improving the function of the adrenal glands may involve some lifestyle changes, the positive effects to one's health maybe well worth it. If your fatigue is due to a malfunctioning of the adrenal hormones, then an improvement in energy is highly likely. If you are planning a backpacking trip across Africa, you may want to be sure your adrenal glands are up for the challenge of being chased by a lion.