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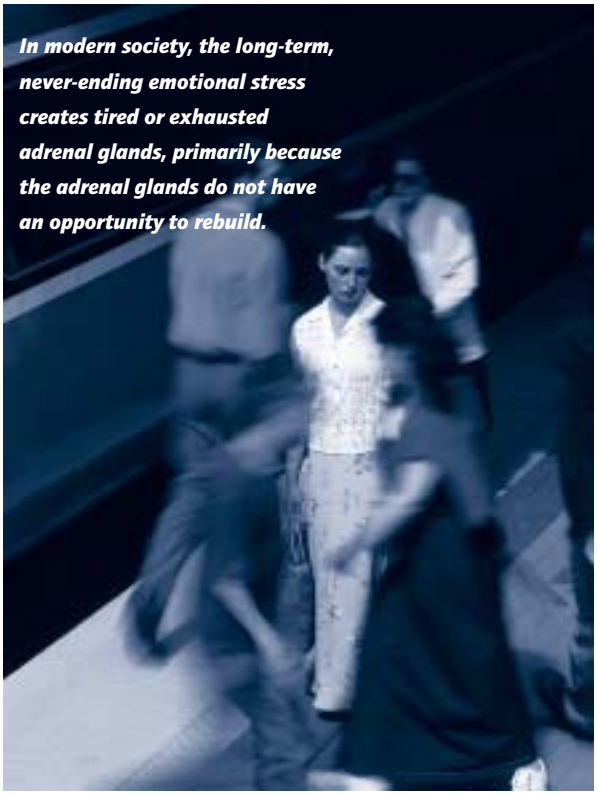
Adaptation to Stress and Natural Therapies

In our modern society we are barraged with various forms of stress throughout each day. We are readily able to adapt to some of those stresses, yet others are or become seemingly insurmountable. Stress and stress-related disorders have been considered a significant cause of disease and may contribute to perhaps 75 % of all illnesses.

A Canadian professor, Hans Selye, MD, is responsible for pioneering the field of stress research and is commonly known as, "the father of stress." His writings on the subject date back to the 1930's, and he is credited with writing over 1700 papers and 39 books on the subject. As the undisputed expert on the subject, he observed as early as 1925 that common symptoms were present in many diseases. He explained this as the syndrome of "just being sick." A triad of physical changes was always present in this syndrome. After exposing rats to various types of stress they were dissected. The dissection revealed: 1) adrenal cortex enlargement; 2) atrophy of the thymus, spleen, lymph nodes and all other lympatic structures and; 3) deep bleeding ulcers in the stomach and duodenum.

Selye classified the progression of stress on the body and it's influence on the adrenal glands. The classification is called the "General Adaption Syndrome" (GAS) (Selye, 1956; Ward, 1998). The three stages which are described include alarm, resistance and finally exhaustion. The "Alarm Reaction" is characterized by surprise and anxiety and is considered to be a general call to arms. The adrenal glands secrete hormones, i.e epinephrine, norepinephrine and hydrocortisone. This phase occurs quickly and accounts for a phenomenon such as a petite mother lifting a car to free her child. "Resistance" represents the second phase of stress, when the body prepares to continue and adapt to the prolonged fight ahead. Adrenal hypertrophy and other factors of the triad of stress are found in this stage. An individual can respond and meet the demands of the stress as long as this stage continues. If the adaptive stress is resolved, a rapid return to the resting state can be achieved. "Exhaustion" occurs when the adrenal glands can no longer meet the demands placed on them due to the prolonged stress. Dilman and Dean (1992), who are responsible for the neuroendocrine theory of aging, refer to this phase as adrenal maladaptation or hyperadaptosis. Hyperadaptosis is considered by some to be a precursor to Cushing's Syndrome, and is characterized by prolonged



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exposure to excess cortisol levels and is caused by the loss of hypothalamic sensitivity to the inhibitory effect of cortisol (Dilman, 1981). It is the chronically hyperactive Hypothalamus-Pituitary-Adrenal (HPA) Axis that causes these symptoms. These same high levels of stress have been shown by Selye to lead to many of the diseases of aging (Selye, 1976). Robert Sapolsky, the author of *Why Zebras Don't Get Ulcers*, also recognizes the role of these hormones in disease (Sapolsky, 1987). Additionally, chronic health problems, long-term nutritional deficiencies, and long-term emotional problems can all lead to the state of adrenal exhaustion.

Researchers have identified eight physical indicators of an individual's stress load (McEwen, 1998). Stressful life events such as divorce, job loss, family arguments and even traffic jams, in addition to daily maladaptation all add to stress. Among the stress indicators are: increased blood pressure; suppressed immunity to disease; increased fat around the

abdomen; weak muscles; bone loss; increases in blood sugar; increases in cholesterol levels and; increases in steroid hormones, i.e. cortisol.

How our bodies react by producing stress hormones is ostensibly even more important than how we feel about the events. When an episode of acute stress is experienced, cortisol is secreted to protect us by activating, through a complex chain of events, the body's defenses. Acute stress (in the sense of "fight or flight" or major life events) and chronic stress (the cumulative load of minor day-to-day stresses) can both have long-term consequences (www.mercola.com, 1998).

One of Selye's first observations regarding the general adaptation syndrome was that animals under prolonged stress developed sexual derangements. Intense stress caused young animals to cease growing and caused lactating females to produce no milk. Prolonged stress may be partially or totally responsible for amenorrhea in female athletes who are under intense training (Brooks-Gunn, Warren & Hamilton, 1987). Recent research in Ohio reports that wounds heal slower when patients are under psychological stress (Kiecolt-Glaser & Glaser, 2000). With constant sympathetic activation, the immune system becomes depressed.

In modern society, the long-term, never-ending emotional stress creates tired or exhausted adrenal glands, primarily because the adrenal glands do not have an opportunity to rebuild. Because stress is cumulative, the stresses to which the body must react over time can cause mild to moderate adrenal insufficiency, the most common clinically observed entity. In this condition the individual can still react to stress, however, it will be less efficient and take more time.

The goal of health is to maintain homeostasis. When the HPA Axis is disturbed homeostasis is lost. A DHEA/cortisol balance (two hormones secreted by the adrenals) is considered to be a critical marker of overall hormonal health. These adrenal hormones can be tested utilizing saliva samples. A natural approach using hormonal and herbal therapies may be utilized to adjust the DHEA/cortisol balance. Current literature is recommending that DHEA at 12.5 to 50 mg. taken daily in the morning and Pregnenolone at 10 to 100 mg. taken daily in the morning (Hornsby, 1997).

Adaptogens, a group of substances that help the body adapt to stress, have been shown to reduce the damage of the stress response, maintain homeostasis during chronic stress, reduce most evidence of the alarm stage and help delay the exhaustion phase. Royal bee jelly , one of the world's richest sources of pantothenic acid need for the adrenal glands, is an adaptogen. The most widely researched adaptogens are Siberian ginseng (Eleutherococcus Senticosus) and licorice (Glycyrrhiza) (Ritchason, 1995). Licorice is a natural way to supplement the body's endogenous cortisol production, giving the adrenals a well needed rest. Studies have been performed to investigate a licorice daily dosage of 25-100mg and its affect on anxiety (Chen & Hsieh, 1985). Precautions are to use licorice for no more than several weeks at a time to prevent potentiation of glucocorticoids and mineralcorticoids.

Other herbs that have been shown to be of benefit to the adrenal glands include astragalas, bayberry, borage, burdock, kava, kelp, parsley and rose hips (Chen & Hsieh, 1985). Vitamin C also reduces the effects of chronic stress by decreasing cortisol production (American Chemical Society, 1999). Acupuncture, chiropractic manipulation, biofeedback, deep breathing, massage, meditation, avoidance of food allergies and hypersensitivities, proper diet and changed attitudes are just some of the positive things that can be used in the mind/body/spirit realm.

No article on the adrenal glands would be complete without mentioning the positive affect exercise plays in reducing daily stress (Carmack, 1999).

In summary, stress is everywhere we turn, it is essentially pandemic. Our inability to handle these stresses well, leads to adrenal gland overutilization, and ultimately exhaustion. This condition can and does have a negative impact on pain and anti-aging. Through lab testing, lifestyle changes and nutritional and/or herbal supplementation doctors can begin restoring homeostasis and well being in their patients.

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