Part one of two

Stress management

Dr. Proodian's Health Corner

By. Dr. James Proodian

Every one of us experiences some amount of stress in our lives. Some stress is good, and some stress is bad. The important thing is to try to minimize and counteract the "bad stress." Doing so will yield immediate benefits to our health and well-being, and help prevent disease further down the road. This week's article (Part 1 of 2) describes the physiological mechanics of stress and how we can overcome its negative effects. — JP.

What Is Stress?

Simply stated, stress is a stimulus perceived by the body that elicits a response. Dependent upon numerous contextual factors, the outcome of the stimulus-response exchange may be beneficial or detrimental. For example, exercise is considered a "positive" form of stress. As force is applied to the body , it demands an increase in the body's normal physiological and mechanical output. If this is introduced gradually, with a safe and proper approach, muscular strength, flexibility and cardiovascular functioning are improved.

"Task" challenges undertaken may also yield positive results. The practice required to play a musical instrument or the intellectual agility associated with puzzles and brainteasers develop physical and mental acuity . The instinctual desire of an infant to walk and a child' s love of play promotes a solid sense of self, both physically and emotionally.

However, the common use of stress carries a negative connotation. The dif ference between a positive and negative outcome is primarily dependent upon the intensity, duration and/or frequency of the stressors involved.

How Does The Body Respond?

Under normal conditions, the body functions in a highly complex, integrated conglomeration of rhythms: heartbeats, seasonal changes, monthly cycles, hunger, sleep, work and play . Within these highly synchronized patterns, the adrenal glands act as a primary modulator. Operating on a diurnal rhythm, they secrete the chemicals cortisol and DHEA in a predictable, measurable pattern, identical for everyone, regardless of age, gender or race. In response to stress, the balance between these hormones will shift accordingly . The measurable ratio of these steroids reveals the severity of physiological stress for the tested individual.

When the body perceives stress, be it physical, chemical or emotional, it requires glucose to assist in its response. A series of chemical interactions involving the hypothalamus, pituitary and adrenal glands occur , allocating the necessary quantity of glucose to match the demand. First, the hypothalamus (part of the brain) sends the chemical messenger CRF (corticotrophic releasing factor) to the pituitary gland located on the underside of the brain. Upon receiving this input, the pituitary transmits its chemical messenger ACTH (adrenocorticotrophic hormone) to the adrenal glands, sitting on top of the kidneys.

Specialized cells in the adrenal glands receive this input. One type of cell produces cortisol, primarily known for its anti-inflammatory properties, i.e. cortisone is a pharmaceutical facsimile, and the other cell manufactures DHEA, the precursor to the sex hormones testosterone, progesterone and estrogen.

Cortisol released in response to a stress stimulus initiates glucose production via the liver , and if necessary, it will convert protein from muscle tissue or triglycerides from adipose stores into glucose.

This biochemical adaptation evolved to handle short-term stress. For cortisol to be fully effective, the body' s physiological hierarchy is temporarily shifted, directing its attention towards the immediate antagonists at the expense of other biological activities including hunger , the immune system, sleep and reproductive capacities. As the stressors are reduced, all the chemical mediators and cortisol return to their previous levels and normal functioning is resumed. If stressful conditions move from short term or incidental to continuous, ongoing or long term involvement, the stress responses accumulate, laying the groundwork for health dysfunction.

What Happens Next?

The body will move through three basic stages of stress. The first phase is the alarm stage.This is comparable to the aforementioned description of short-term stress. Initially, cortisol increases, accompanied by the rise in the DHEA levels. If the stimulus persists, DHEA output gradually declines, shifting the body into the next phase, called the resistance stage, characterized by physical alterations in or gan tissue structure and invariably , adaptive compromises in function.

The original groundbreaking work in this field, by Dr . Hans Selye, revealed that regardless of the illness diagnosed, three changes always occur — adrenal gland hypertrophy, atrophy of the thymus gland and lymphatic structures (immune system related) and gastric ulcerations. As research progressed and the mechanisms by which cortisol produced these changes became clearly understood, missing pieces to numerous illnesses started to fall into place.

The implications of stress, termed the "neuroendocrine response," are one of the major cornerstones to be considered when evaluating any health condition. According to a laboratory having conducted more than 200,000 salivary cortisol and DHEA tests, approximately 45-55 percent of the population tested displayed adrenal hyperfunction; (stage 2 stress) referred to as hypercortisolemia. Another 15 percent suf fered from overproduction for such an extended period of time, they shifted to an inadequate production of cortisol, leading to adrenal fatigue (stage 3). In basic terms, approximately 70 percent of the population contends with a level of stress capable of setting the stage for serious illnesses.

Within the resistance phase, the variable range of cortisol DHEA imbalances is so far -reaching, it is beyond the scope of this article. However, the effects are easily demonstrated in aller gies, asthma, bowel dysfunctions, hypoglycemia, fatigue, thyroid impairment, recurring infections, etc. Stage 3 is adrenal fatigue. The cortisol-producing cells are replaced by fat and hemorrhagic blood vessels are visibly noticeable. Daily cortisol output is below normal, creating serious fatigue, chronic blood sugar instability and impaired mental functioning, i.e., memory and learning. Concurrent with the cortisol flatline, DHEA levels increase, verifying the exhaustion stage.

In part 2 (published in two weeks) you'll learn tips and techniques for overcoming stress.

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Dr. James Proodian is an author, educator, and healthcare practitioner specializing in Chiropractic Rehabilitation and other natural healing techniques. He also provides free health lectures and health screenings for companies, clubs, schools, churches, and other organizations throughout Monmouth County. Dr. Proodian can be reached at his practice, Natural Healthcare Center, at 732-222-2219.

Part two of two

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Every one of us experiences some amount of stress in our lives. Some stress is good, and some stress is bad. The important thing is to try to minimize and counteract the "bad stress." Doing so will yield immediate benefits to our health and well-being, and help prevent disease further down the road. This week's article (Part 2 of 2) continues the discussion on stress and gives specific advice on how we can overcome its negative effects. — JP.

What Are The Stressors?

As stated previously , the neuroendocrine response (the technical term for stress), though short term by nature, is an accumulative process, varying for individuals depending upon their genetic tendencies, temperament and exposure to numbers, severity and chronicity of stressors. These stressors are categorized as:

Physical: Trauma, burns and injuries requiring emer gency medical attention evoke an exponentially rapid and lar ge rise in cortisol. The more common stressors are routine exposure to endurance training or overtraining, late night exercise, graveyard shifts, long work hours, lazy postural habits, and poor er gonomic work facilities.

Emotional/Mental: This is the most familiar category. Our daily conversations and interactions carry a list of complaints from work and family to financial and social concerns. Each specific incident carries a little weight, but the constant influx of numerous influences adds to the total sense of overwhelm. Research indicates major life changes carry an enormous impact, with emphasis on death of a loved one, divorce, moving, job loss, legal entanglements and financial loss. Careful consideration of these factors is crucial for an accurate evaluation of any illness or symptom.

Biochemical: Maintenance of healthy cortisol levels is predicated upon the protein to carbohydrate ration consumed. Each meal should contain approximately 25 percent protein, 0-25 percent complex carbohydrates, depending upon each individual's sensitivity to these foods, and 50-70 percent in vegetables (salads not included here, but should be eaten). Consumption of sugars, breads, pastas, sodas and fruit juices upsets this ratio, forcing an overproduction of insulin and a counterbalancing upshot of cortisol. Eventually this may fatigue the insulin producing cells and halt manufacturing as in diabetes. Cell desensitization to insulin is a more common response, resulting in fatigue, increased carbohydrate cravings, and in certain individuals, obesity. Trendy diets, weight loss gimmicks, skipping meals or minimizing food intake yields an elevated cortisol response.

Outcome

Hypercortisolemia carries a heavy metabolic price tag. Quite often, diagnosis of chronic illness ignores the neuroendocrine response, offering less than optimal opportunity for corrections. Investigations document the strong influences of the neuroendocrine response in the following:

- Infectious and autoimmune disease — shut down conditioning of immune cells.
- Gastrointestinal illnesses — depletion of intestinal immune functioning makes the body vulnerable to asthma, aller gies, IBS, colitis, yeast, etc.
- Cardiovascular disease — high blood pressure, atherosclerosis, ischemic heart disease
- Hypothyroidism — proper conversion of T4 hormone to T3 is blocked
- Poor wound repair — skin, muscles, tendons
- Chronic fatigue
- Reproductive dysfunctions — ammenorhea, PMS, possibly polycystic ovary syndrome
- Detoxification problems
- Cancer
- Inefficient prostaglandin production
- Osteoporosis
- Depression, Alzheimer's, hyperactive thought process, poor memory
- Sleep disturbances

What To Do

Modification of lifestyle and common sense is always the best choice. However , certain fundamental changes are required to strongly offset and correct imbalances incurred.

Diet: Elimination of simple processed carbohydrates, sugars, coffee, alcohol and sweet drinks. Regulation of complex carbohydrates, comprising no more than 20 percent of any meal, with fruits, nuts and seeds for snacks. Each meal contains 25 percent protein and 50-70 percent vegetables.

Supplementation: Adrenal gland support includes vitamin C with bioflavanoids, zinc, biotin, phosphotidyl serine, pantothenic acid, and B6. Other vital nutrients include the amino acids glutamine, branch chain amino acids, possibly cysteine and taurine, coenzyme Q10, magnesium, alpha lipoic acid, and essential fatty acids. Drink 70-100 ounces of water depending on size and activity levels. Avoid ephedra and mahuang.

DHEA and pregnenalone, if needed should be under the strict supervision of a physician. There can be serious side effects in certain situations, i.e., estrogen mediated dysfunctions - breast cancer, endometriosis, cervical dysplacia etc. Warning signs are upset stomach, headaches, male pattern hair growth, spotting, acne and breast tenderness.

Behavior: Find a form of aerobic exercise conducive to your needs. Upon reaching maximum heart rate, maintain your intensity for 30-40 minutes. More than 40-50 minutes reintroduces the stress response. Develop a balance between play and work. Relaxation may be achieved through meditation, biofeedback, prayer, proper breathing, or some time alone. Developing personal hobbies and creative interests are beneficial. No smoking!

Take time instituting changes. Small, slower steps avoid frustration and quitting. Keep your expectations small in the beginning and be patient. Inform your physician of all changes especially if you are taking medication.

I hope you've enjoyed reading this two-part article on Stress. Try implementing some of the recommendations for overcoming stress – you'll be glad you did.

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