The Stress Glands

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The adrenal glands have become known as "The Stress Glands" because of their important role in influencing the over-all resistance of the body, adjusting to changes in the internal and external environment.

We hear a lot about "cortisone", one of the hormones produced by the adrenal glands. But why do we need these hormones? Why do the glandular systems of the people of this country fail, in many cases, to supply these life-sustaining factors?

Exposure to overstrain

Some would have us believe that this failure is due to "the stress and strain of modern living". Yet, the great technological advances of our times have been in the direction of reducing these stresses, of producing a pattern of living designed for ease and comfort. Apparently, this technology has not been successful in many respects.

Instability, lowered stamina and resistance to disease are of greater concern in these modern times than ever before. Drug tranquilizers have become a part of our everyday nomenclature. Arthritis, diabetes, circulatory disorders and heart disease plague us. So-called minor complaints – headaches, indigestion and "irregularity" – have become so commonplace that they are "big business" and we relieve our symptoms with proprietary crutches, to the tune of millions of dollars' worth of aspirin, antacids and laxatives every year.

Can we attribute this state of affairs to "modern living" or is there another answer?

Effect of malnutrition

If we remove the adrenal glands from a test animal and expose it to stresses such as extremes of temperature, drugs or extreme exercise, these stresses become extremely toxic, the animal is not adaptive to these circumstances. The adrenals have been shown to be the first to fail in toxic manifestations such as severe burns, infections and poisons, as well as being susceptible to failure from mental stress and strain.

But, perhaps the most basic insight to this problem was given us by Dr. Robert McCarrison in his book, *Studies in Deficiency Disease*. Dr. McCarrison relates that in all cases the adrenals were damaged when his test animals were fed on refined foods like white flour and sugar. He tells also of damage to the thyroid, thymus, pituitary and sex glands. The glands reacted to this diet by swelling or shrinking, with ultimate loss of function.

Functions of adrenals

The human economy is adjusted so that it possesses various reserves, depots of supplies so to speak, which are available to be mobilized, redistributed or otherwise utilized as the demands of the body change under various stress circumstances. It is a useful thing to think of the adrenals as the regulators of these reserves. Some of the important functions in this capacity may be listed as follows:

1. Redistribution of blood as required by exercise from the abdominal area to the muscles.
2. Mobilization of reserves of blood sugar from the liver and possibly the muscles.
3. Redistribution of oxygen by relaxing muscles of lungs and contracting the spleen.
4. Regulation of mineral metabolism, particularly chloride, potassium and sodium.
5. Effect on vasomotor system (blood pressure).
6. Secondary sex characteristics.

Relation to disease

"Resistance" is a general term which can, perhaps, best be applied to the adrenal glands. Many diseases have been associated with adrenal integrity – respiratory disorders, carbohydrate metabolism and the acid-alkaline balance. Asthma and arthritis (rheumatoid) in particular are related to adrenal insufficiency.

But, there are also a host of lesser disorders that may involve the adrenal glands – chronic fatigue, or what is commonly referred to as "nervousness" or "a rundown condition", may have in the background a failure of the adrenals to meet the stress load.

Nutritional possibilities

Vitamin C is found in high concentration in adrenal gland tissue. Tyrosine, an essential amino acid, is also present. (Note that tyrosine is, in part, mobilized by the oxidative enzyme, tyrosinase, found in mushrooms.) Other nutritional factors present are vitamin B-6, choline and glutathione. The retention and excretion of sodium and potassium has been demonstrated. Cholesterol is also present, probably as precursor of adrenal cortical hormones.

Exactly what the function of these factors are in adrenal activity has yet to be explained, but their presence reveals a significant relationship to Dr. McCarrison's experiments on animals on deficient diets, calling to mind the old adage, "You can't make something out of nothing."

Moderation

Any approach to a stress situation requires that excesses be avoided and moderation take their place. It is obvious that food additives foreign to the body's economy, chemical sprays, and even smog contaminants, may be considered as such excesses.

How seemingly far removed these contaminants may be from the "stress syndrome" may guise their importance to the casual observer, but to those who are cognizant of their deleterious effects, like Dr. Wiley, first head of the Food and Drug, these are very real and frightening considerations. Any poison is "too much".