The Complex Response To Stress

In the clinical setting stress is one of the most pervasive "health eroding factors" that spans age, sex and ethnicity. Unfortunately, many patients still believe that they can stave off the negative effects of stress with a strong mind and perseverance.

One common debate had with patients is that of their "stress status". When suggested that some of their symptoms may be arising from ongoing stress, all too often the resounding answer is: "I am not stressed!" This is often followed by "Life is great!" or "I have everything under control."

In this situation it is often helpful to define various forms of stress and share some contrasts of dis stress and eu stress using an objective tool. As captured by the Holmes Rahe stress chart of life events, the inherent "stress value" placed on life events can often be similar. For example, getting fired compares with retirement, taking out a mortgage compares with losing one's home, personal achievement has a similar effect to an empty nest syndrome etc.

This table is taken from "The Social Readjustment Rating Scale", Thomas H. Holmes and Richard H. Rahe, Journal of Psychosomatic Research, Volume 11, Issue 2, August 1967, Pages 213-218, Copyright © 1967 Published by Elsevier Science Inc. All rights reserved.

Upcoming events

<table>
<thead>
<tr>
<th>Restorative Medicine Conference</th>
<th>The Neurotransmitter Connection To Adrenal Dysfunction Webinar</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 13 – 16, 2012</td>
<td>For more information: Click Here</td>
</tr>
<tr>
<td>For more information: Click Here</td>
<td>To register for the webinar Click Here</td>
</tr>
</tbody>
</table>

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Once a patient identifies that stress is more ubiquitous than originally thought, attention and intention often shifts to the potential ravages of stress if left unchecked. In clinical practice, a focus on clinical diagnostics not only serves to elucidate the patient's health status, it often empowers the patient when they see their physiology in "black and white". Ultimately, the mantra "test, don't guess" serve both clinician and patient well. A recent article in the journal, Brain Research, titled: Stress, neurotransmitters, corticosterone and body brain integration; captures the true complexity of the stress response. Testing cortisol, DHEA, sex hormones and neurotransmitters can offer significant clinical insight as to the cause and effect of stress within a given patient from a holistic perspective. "The organization of the response to a stressful situation involves not only the activity of different types of neurotransmitter systems in several areas of the limbic system, but also the response of neurons in these areas to several other chemicals and hormones, chiefly glucocorticoids, released from peripheral organs and glands. Thus, stress is probably the process through which body brain integration plays a major role. Here we review first the responses to an acute stress in terms of neurotransmitters such as dopamine, acetylcholine, glutamate and GABA in areas of the brain involved in the regulation of stress responses. These areas include the prefrontal cortex, amygdala, hippocampus and nucleus accumbens and the interaction among those areas. Then, we consider the role of glucocorticoids and review some recent data about the interaction of these steroids with several neurotransmitters in those same areas of the brain."

The trillions of cells that comprise the body exist in a well ordered homeostasis and when disturbed (as with stress) a ripple effect is created that affects the entire neuroendocrine system and cellular function.
Identifying the variables that may be askew allows for discernment in challenging cases that may otherwise be elusive. While salivary cortisol levels have long been the gold standard in evaluation of adrenal function, this study (along with others) indicate that there is significant clinical benefit to measuring neurotransmitter levels in addition to cortisol. Through this comprehensive approach, a more detailed assessment of adrenal function is gleaned.

Resources:

Mora F Segovia G Del Arco A de Blas M Garrido P. Stress, neurotransmitters, corticosterone and body brain integration. Brain Res. 2012 Jan 3.[Epub ahead of print]

To learn more about neurotransmitters, register for the upcoming webinar "The Neurotransmitter Connection To Adrenal Dysfunction" scheduled on Tuesday, September 18th at 9:00am PT. Click here to register.