

The Adrenal/Thyroid Connection

Part 2: Objective assessment and treatment considerations

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In my previous article I outlined the connection between adrenal fatigue and thyroid dysfunction. In short, the stressful world in which we live can prompt the pituitary gland to secrete elevated concentrations of ACTH into the bloodstream – a common factor in the stress response. In turn, ACTH triggers the adrenal cortex to synthesize and secrete super-physiological levels of cortisol into the bloodstream. Elevated cortisol levels have an adverse effect on many organ systems, promoting hyperglycemia, weakened immune function, promoting bone demineralization and other undesirable outcomes. Another effect of elevated cortisol levels involves the inhibition of thyroid hormone's effects at the gene-cellular level, as well as inhibiting the synthesis and release of thyroid hormone from the thyroid gland. The net effect is a type of thyroid blockade, which can produce symptoms and signs of an underactive thyroid that does not always respond to administration of thyroid hormone replacement therapy.

In patients who are under stress, who exhibit symptoms and signs of an underactive thyroid, and yet exhibit normal blood tests for thyroid function (according to conventional blood interpretation, which we will challenge shortly), a simple intervention is to put the patient on a clinical trial for 8 weeks of both a Thyroid Support Supplement and a Adrenal Support Supplement. In many cases the patient will feel much better with concurrent improvement in objective signs and symptoms (e.g. lower fasting glucose, fewer colds and flus, improved hair and skin texture, more energy, improved memory and concentration ability etc).

As outlined in my previous article, Thyroid Support Nutrients of importance include a combination supplement containing meaningful dosages of:

Tyrosine
Iodine
Coleus Forskolin
Gum Guggul

Adrenal Support Nutrients of importance include a combination supplement containing meaningful dosages of:

Ashwagandha
Rodiola
Schisandra
B-vitamins (pantothenic acid, B6)
Vitamin C
Zinc

More Detailed Assessment

For practitioners who wish to probe further in an attempt to gather more objective evidence for adrenal fatigue and/or thyroid dysfunction, the following information will prove valuable from a clinical assessment and monitoring standpoint.

Thyroid Testing: The conventional way to test for an underactive thyroid is to assess the patient's TSH blood level (Thyroid Stimulating Hormone). The higher the value the more stimulation the thyroid gland needs in order to synthesize and secrete thyroid hormone. Thus, higher levels of TSH in the blood indicate an underactive thyroid.

Conventional medical doctors have been taught that the normal range for TSH is 0.2 - 5.5 mU/L. The past president of the Life Extension Foundation, Dr. Philip Lee Miller M.D., teaches that the ideal range for TSH is actually between 1.0 – 2.0 mU/L, and that any value above 2.0 mU/L suggests under active thyroid function. Thus, it is easy to see why many patients who have been told they have normal thyroid function, in the presence of classic signs and symptoms of an underactive thyroid, actually do in fact have a thyroid problem that is not being addressed.

From a patient management standpoint it may be possible to lower the TSH from as high as 4.0 mU/L down to the ideal range of 1.0 – 2.0 mU/L via supplementation alone, by using the Thyroid Support Supplement Cocktail I outlined above (dosages found in my previous article). Whereas, a TSH level above 4.0 mU/L most often indicates that the patient requires Thyroid Replacement Therapy, which involves the use of a prescription drug. However, most medical doctors prescribe a synthetic thyroid replacement drug, such as Synthroid or Levothyroxine, which are synthetic versions of T4 thyroid hormone. Many holistic medical doctors and naturopaths, whom I have met personally, have provided objective evidence to show that prescription-based dessicated thyroid (porcine source) tablets provide a more effective approach to thyroid replacement therapy in these patients than does the use of synthetic thyroid drugs (e.g. Synthroid).

It is important to note that the body converts T4 thyroid hormone into T3, and that T3 is the most active form of thyroid hormone. Dessicated Thyroid tablets contain both T3 and T4 forms of thyroid hormone, whereas synthetic thyroid drugs contain only T4. More holistic practitioners claim that the inclusion of T3 in dessicated thyroid explains the superior results it provides, as many thyroid patients also have difficulty converting T4 to the more active T3.

Thus, your role as a practitioner is to:

1. Request that the patient bring you a copy of their blood work and determine the TSH level, to see if the patient's family doctor or endocrinologist has used conventional thinking, or the more optimal range interpretation, to determine the patient's thyroid status
2. If the TSH value is above 4.0 mU/L, then help the patient find a more holistically-minded doctor who will prescribe dessicated thyroid.
3. Even if the patient is prescribed thyroid replacement (whether synthetic or dessicated thyroid), providing the patient with a Thyroid Support Supplement (see ingredients above) can help improve the efficacy of the drug.
4. If the patient's TSH level is between 2.0 and 4.0 mU/L (thyroid dysfunction), then you can try using a Thyroid Support Supplement for 2-3 months first, to see if the TSH levels drops down into the ideal range (1.0 – 2.0 mU/L). If it doesn't then

the patient should add a prescription-based thyroid replacement therapy drug (preferably desiccated thyroid).

- It is also helpful to know the patient's blood levels of free T4 and free T3. These are the unbound levels of thyroxin hormone, which are available to exert their effects on the body's tissues. The ideal range for free T4 is 1.2 – 1.4 ng/dL, according to Miller, whereas conventional medical doctors accept a range between 0.7 – 1.53 ng/d, as being normal.
- Similarly, the ideal range for free T3 is reported to be 2.8 – 3.2 pg/ml, whereas conventional medical doctors accept a range between 2.6 – 4.8 pg/ml, as being normal.
- According to more holistically-minded doctors, if the free T4 level is below 1.2 ng/dL and/or a free T3 level is below 2.8 pg/ml, then thyroid replacement therapy is likely required.
- In many cases conventional doctors do not order the free T3 and free T4 blood tests. Patients with thyroid-type symptoms should request free T3 and T4 panel along with the TSH test.

Adrenal and Cortisol Assessment: Although not routinely requested in the evaluation of the patient's thyroid status by conventional medical doctors, blood levels of cortisol, DHEA and the DHEA:Cortisol ratio can help practitioners discern if the patient's symptoms are being complicated by the impact of stress on the patient's adrenal function.

The ideal range for blood cortisol is reported to be 9 – 14 mcg/dL. A cortisol level above this value suggests elevated cortisol, which can interfere with thyroid hormone synthesis and/or block the effects of thyroid hormone (T4 and T3) at the cellular level; whether the thyroid hormone was secreted by the patient's thyroid gland, or administered as a synthetic T4-containing thyroid replacement drug (e.g Synthroid), or as desiccated thyroid tablets.

In addition, it is valuable to know the patient's DHEA blood levels (dehydroepiandrosterone), as DHEA levels decline in cases of the adrenal stress response. This occurs because the adrenal glands use cholesterol to manufacture both cortisol and DHEA. When they up-regulate the biochemical pathway that synthesizes cortisol, then DHEA synthesis automatically declines. As DHEA is the precursor molecule from which the body synthesizes testosterone and estrogen, it is easy to see why patients with adrenal fatigue often report a decline in libido, sexual performance, lean mass gains and abdominal fat accretion (not to mention the amplified adverse effects on bone density), as part of the constellation of symptoms and signs involved in the adrenal stress response.

Ideal levels of DHEA are considered to be:

- Men: 250 – 450 mcg/dL
- Women: 150 – 350 mcg/dL.

The ideal ratio of DHEA to Cortisol is reported to be 15 – 25: 1

When DHEA levels are low, and/or the DHEA:Cortisol Ratio is low, some doctors prescribe DHEA supplementation, which has been shown to counter many of the effects of high cortisone levels, due to the stress response, and/or aging the aging process. The

danger is that DHEA supplementation may increase risk of prostate, breast and endometrial cancer, and thus, I do not recommend DHEA supplementation as the first course of action in these cases. Rather, my preference is to provide the patient with B-vitamins, vitamin C, zinc, and Adaptogen Herbs (as outlined above in the Adrenal Support Supplement), which are shown to decrease the release of cortisol from the adrenal glands in these cases, and provide many other anti-stress and anti-fatigue benefits in patients suffering from adrenal dysfunction due to stress.

One additional way to assess adrenal dysfunction is through the diurnal evaluation of saliva cortisol testing. The World Health Organization has indicated that saliva testing of cortisol levels is a reliable index of cortisol's effects on the body's tissues.

Saliva Cortisol Testing: The test involves simply spitting into a test tube. Cortisol is measured four times - in the morning (8 AM), noon, evening (4 PM) and night (best between 11 PM and midnight). Other steroid hormones, such as estrogen, progesterone, DHEAS and testosterone can be measured along with cortisol in the 8 AM saliva sample, if desired.

Once the sample set is complete, the tubes are mailed back to the lab for analysis in the mailing envelop that is included with the test kit. Test results from the lab are usually mailed back within 2 weeks.

The adrenal glands produce cortisol 24 hours per day with a regular diurnal variation. Cortisol output is highest within the first hour after waking, declines steadily through the day, and reaches a low during sleep. Adrenal exhaustion tends to result in a flattened cortisol profile with loss of the morning surge, while earlier stages of the General Adaptation Syndrome generally result in one or more elevated cortisol points. There are several labs that provide the service, which can easily be found using an online search.

Summary

Many patients present a constellation of symptoms and signs suggestive of an under active thyroid gland and/or adrenal dysfunction. In some cases adrenal dysfunction, due to stress, causes or amplifies problems involving an under active thyroid. As many conventional medical doctors use an outdated reference range to evaluate thyroid function, it is important to request a copy of the patient's blood work in order to evaluate the patient's status using the optimal reference ranges promoted by many doctors who received additional training through the Life Extension Foundation and/or the America Academy of Anti-Aging Medicine. In addition to TSH blood levels, the patient should also request evaluation of their free T4 and T3 blood levels to complete the thyroid profile.

In the assessment of adrenal involvement, the patient's cortisol, DHEA and DHEA:Cortisol Ratio should be determined from their blood work, and saliva cortisol should be included to view the patient's diurnal output of cortisol. It's important to remember that high cortisol levels may block the effects of thyroid hormone at the cellular level, and/or be a major contributing factor of the inability of the thyroid gland to synthesize and secrete optimal levels of thyroid hormone. As such, adrenal status and thyroid status should be performed concurrently.

There are nutritional supplements, which containing adaptogens along with key vitamins and minerals, that have shown remarkable effects in lowering cortisol levels and improving other effects of stress on body tissues, including brain function. These nutrients should be used as part of the management in cases where the stress response is determined to be a contributing factor to the patient's symptom picture. There are also thyroid support nutrients that can bolster thyroid function and improve the conversion of T4 to T3, which is the most active form of thyroid hormone. A thyroid support supplement combination of this nature can be used as a sole intervention in cases of thyroid dysfunction when the patient's TSH level is between 2 – 4 mU/L. If the patient's TSH level is above 4mU/L, they will most likely require thyroid hormone replacement (ideally desiccated thyroid). Thyroid support nutrients can enhance the efficacy of thyroid hormone replacement, and thus, should also be administered as an adjunctive measure in patients who are prescribed thyroid hormone replacement therapy.

References:

- The Stress of Life (revised edition). Selye H. McGraw-Hill. 1976
- The Life Extension Revolution. Miller PL. Bantam Books. 2005
- The Official Anti-Aging Revolution. Klatz R. and Goldman R. Basic Health Publications. 2007.
- Buvat J. Androgen therapy with dehydroepiandrosterone. World J Urol 2003 Nov;21(5):346-55
- Calhoun K, Pommier R, Cheek J, Fletcher W, Toth-Fejel S. The effect of high dehydroepiandrosterone sulfate levels on tamoxifen blockade and breast cancer progression. Am J Surg 2003 May;185(5):411-5
- Calhoun KE, Pommier RF, Muller P, Fletcher WS, Toth-Fejel S. Dehydroepiandrosterone sulfate causes proliferation of estrogen receptor-positive breast cancer cells despite treatment with fulvestrant. Arch Surg 2003 Aug;138(8):879-83
- Can DHEA Prevent BPH and Prostate Cancer? Townsend Letter for Doctors & Patients 1998 Jul;180:p33,1p
- Comstock GW, Gordon GB, Hsing AW. The relationship of serum dehydroepiandrosterone and its sulfate to subsequent cancer of the

prostate. Cancer Epidemiol Biomarkers Prev 1993 May-Jun;2(3):219-21

- Jones JA, Nguyen A, Straub M, Leidich RB, Veech RL, Wolf S. Use of DHEA in a patient with advanced prostate cancer: a case report review. Urology 1997 Nov;50(5):784-8
- www.stophethyroidmadness.com
- www.armourthyroid.com
- <http://www.virginiahopkinstestkits.com/cortisolzava.html>
- <http://www.thyroid-info.com/articles/shamesadrenal.html>
- <http://www.naturalelixir.com/stresscontrol.html>