

THYROID FUNCTION DIAGNOSIS AND TREATMENT

By Larry Durrant, Pharmacist

Thyroid dysfunction seems to be a growing concern in America. It has been shown that 10% of all Americans have thyroid problems. Of this group, 80% are women. One-half of this group is still undiagnosed. The research also shows 26% of all menopausal women are hypothyroidal. From research and specialized medical practice in this field, Dr. Richard Shames, M.D.; and Dr. Karilee Shames, R.N.,PhD.; and several other colleagues have addressed the issue of thyroid assessment and treatment. This summary of their work is a very brief overview of their work and serves only to introduce the material which should be studied more closely to understand more fully how it applies to the individual patient treatment.

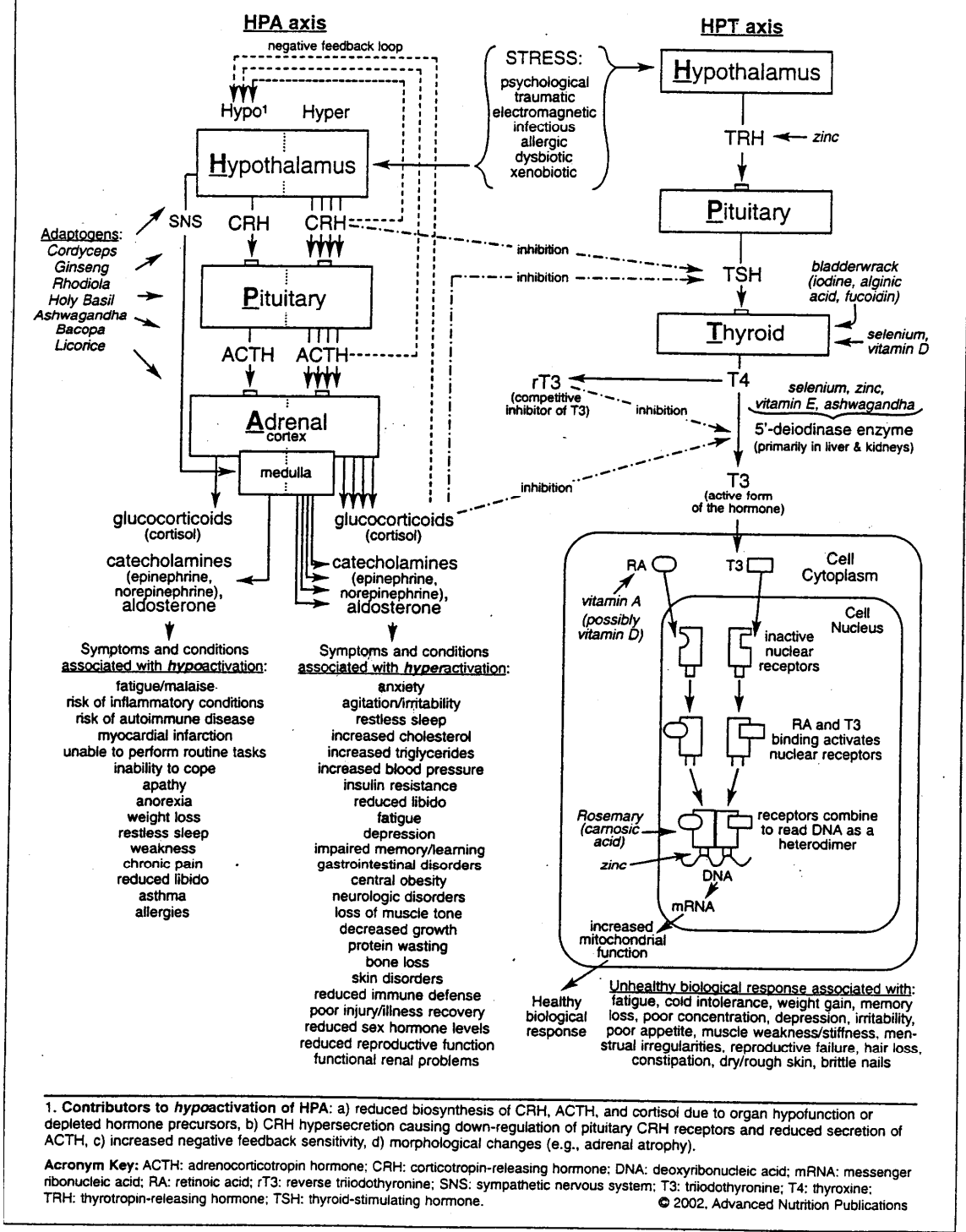
In figure 1 (next page), the connection between the HPA/HPT axis and thyroid function is shown. Low thyroid activity triggers the hypothalamus to release thyrotropin-releasing hormone (TRH). TRH then stimulates the pituitary to release thyroid-stimulating hormone (TSH). TSH then directly stimulates the thyroid gland to bind a tyrosine molecule with 4 iodine molecules to form Thyroxine (T4). T4 is an inactive thyroid product. It will either (1)remain T4, (2)shunt to reverse-triiodothyronine (rT3), the inactive mirror image of T3, which also is both inactive and a competitive inhibitor of triiodothyronine (T3), or (3)with the aid of selenium, zinc and the enzyme 5'deiodinase found in the liver and kidneys remove the proper iodine to create T3. T3 is the active thyroid hormone. It is the only form which will cross the cell membrane. In the cytoplasm, T3 couples with retinoic acid and crosses into the cell nucleus where they combine with nuclear receptors and stimulate mitochondrial function.

The activity of every cell in the body is influenced by the presence of T3 in that cell. As T3 levels drop, mitochondrial activity drops and renders symptoms that we associate with getting older: fatigue, weight gain, memory loss, poor concentration, depression, irritability, muscle weakness/stiffness and pain, joint pain and tenderness, menstrual irregularities, reproductive failure, hair loss, constipation, dry skin, and brittle nails.

The battery of thyroid function tests tell many things and are also limited in what they reveal. The primary tests used are the following:

1. T4 testing - a measure of free unbound T4 in the blood. It became clear early on that T4 was an inactive thyroid and this did not help measure the T3 levels.
2. Thyroid Panel - originally T4 values were measured, then T3 values were measured. A mathematical formula was established to render a T3 value from a T4 level. This is called the T3 Uptake Test and the T3 value arrived at is called the Free Thyroxine Index. This does not, however, involve a T3 measurement and is considered by many as inadequate and useless.
3. TSH Test - here, TSH levels are measured. The normal values for this test has been redefined several times. The normal for years has been between 1-5.5. In November 2002, the normal values were reset to 1.0 - 2.5. Any value of 3 or above is considered suspicious. This is not a conclusive test by itself, as T3 levels are still undetermined, but coupled with other tests and a review of symptoms makes it very helpful in determining Pituitary adequacy in ultimate T3 production.
4. Total T3 - a blood test to measure T3. In certain hyper- and hypothyroid patients, this shows abnormalities when the thyroid panel and TSH are normal. Total T3 is misleading because it actually reflects the value of T3 and rT3 together. If the T4 converting enzymes are low or absent, a normal value may occur with the rT3 being significantly elevated and T3 being very low with subsequent hypothyroid symptoms. A true T3 value devoid of rT3 can only be obtained by fractioning the sample- a costly lab procedure insurances and doctors are reluctant to do.
5. Free T4 and Free T3 - this measures unbound T4 and T3 and is helpful in measuring low thyroid when other tests are normal. It still does not identify all with low thyroid because of several reasons such as that explained in point 4 above.
6. TRH Test - this test reveals how much TSH the pituitary is keeping in reserve. TRH is injected and blood levels of TSH are drawn at 15, 30, and 45 minutes. This is expensive and many

Figure 1. The Effects of Stress and Nutritional Support on the HPA / HPT Axes



insurances restrain physicians from using it much, but it does reveal a pituitary source of thyroid problems.

7. Thyroid Peroxidase (microsomal) Antibody and Antithyroglobulin Antibody Tests - MOST thyroid conditions are autoimmune in nature and these tests measure if the immune system may be sending out antibodies against the thyroid. If the other tests show up normal and yet the

patient complains of hypothyroid symptoms, this test may uncover the problem. A slightly elevated score with no symptoms will likely not require treatment, but symptoms present with the elevated score would warrant a clinical trial of thyroid medicine.

8. Body Temperature Test - body temperature is one of the most useful of all signs that can be observed by the patient or the physician. Since the thyroid gland controls metabolism, one simple measure of metabolic rate is body temperature. Dr. Broda Barnes, M.D., a renowned and widely published thyroid researcher stated, "More information can be brought to the physician with only the aid of an ordinary thermometer, than can be attained with all other thyroid function tests combined." A basal thermometer is placed under the arm (and 1 degree added) or inserted under the tongue in the morning when awakening before sitting up or getting out of bed. An average of less than 97.6 degrees over 7 days is a positive sign of hypothyroidism.

The consensus of the researchers is that regardless of the test results, the patients' symptoms should be scored (see accompanying thyroid assessment test for point system) and family history especially considered.

Treatment options are numerous and include Synthroid (T4), Armour Thyroid (T3 & T4), Cytomel (T3), T3/T4 combinations, compounded T3 or T3/T4 combinations, Thyrolar, and several other prescription drugs and homeopathic remedies.

Adrenal gland function should be given serious consideration in the face of thyroid dysfunction. It has been well documented that with compromised adrenal function, thyroid activity is extremely difficult to regulate and restore to normal function. There are several excellent non-prescription products which support adrenal function and repair. These products do not suppress body cortisol production as do the cortisol shots usually given in this state. A 30 day treatment of these products is recommended before assessing the need for thyroid treatment. Symptoms of low adrenal function closely mimics those of hypothyroidism. There are few distinguishing symptoms. Hypothyroid patients will crave sugars and carbohydrates usually while low adrenal function sufferers will desire fats and salty foods. Cortisol levels are usually taken several times throughout the day to determine adrenal activity as well.

The treatment protocol requires the patient to take the Thyroid Self Assessment Test to determine the likelihood of hypothyroidism based on score. If enough symptoms are present, a 30 day treatment of Adrenal support products is begun. After that, the test is repeated and reviewed. With improved adrenal function and persisting symptoms, a thyroid replacement is begun. As is often seen, levothyroxine (Synthroid or T4) given in the absence or low concentrations of deiodinase enzymes will remain in its inactive form and symptoms will not improve. Poor diet, stressful lifestyles and hormone imbalances lead to these low levels of the T4 converting enzymes. Armour Thyroid, being a combination of T3 and T4 seems to give much better results in the patient. Being a product of bovine thyroid gland, the possibility exists of allergic reaction to the medicine, although it happens little. In those cases, a compounded medicine with the pure T3/T4 drugs can be provided. The suggested dose is 30mg Armour Thyroid daily for 14 days. If body temperature remains 1 degree or more lower than 98.6 degrees on average, the dose is increased to twice daily for 14 days. Thereafter the dose is increased to 60mg given 1-1/2 morning and night for 14 days. Thereafter, if body temp remains low, T3 (triiodothyronine, cytomel) is added at 5mg increments every 14 days until symptoms begin to abate and temperature becomes normal. In the higher dosage ranges, the patient should be carefully cautioned about symptoms of high thyroid levels if the dose goes too high. Before each dose adjustment, the assessment test should be done. A compounded T3 can be made to release slowly and prevent the rapid rise and fall of blood levels which occurs with the Cytomel products.

Nutrition plays an extremely important role in thyroid function. To determine which foods suppress thyroid function, the individual may keep a diary of temperatures taken 3 to 4 times a day in addition to recording which foods were eaten at what times and observing which foods caused thyroid function to decline and temperature to go down. There are many foods which are notorious for worsening thyroid function such as:

Soy Lecithin Bioflavones Black Cohosh
Grape Seed Extract Phytoestrogens Hummus Chick Peas
Garbonzo Beans Gingko Biloba Vegetable Oil Trans fats(hydrogenated oils) Almonds Walnuts
Peanuts Sausage
Hot Dogs Non-dairy creamer Mayonnaise Margarine
Chocolate (sorry!) Many Salad dressings, crackers, bread Cookies
Wine Some Herbal Teas Sorghum Pine Nuts
Millet Cassave (tapioca) Brussel Sprouts Cauliflower
Cabbage Broccoli Turnips Mustard Greens
Spinach Rutabaga

Paramount to assessing thyroid is following the advice from most medical schools: Regardless of the test results, pay close attention to the symptoms. In treating thyroid problems this is especially appropriate.

Finally, it has long been held that unnecessary thyroid supplementation lends to osteoporosis. In recent years, new research is revealing that a hypothyroid condition more negatively affects osteoclast and osteoblast activity than thyroid supplementation giving rise to osteoporosis. Proper restoration of thyroid function will improve bone density and prevent worsening of osteoporosis. If you desire more information, please let me know.