

Functional Hypothyroidism

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Thyroid hormones regulate metabolism in every cell so a deficiency can affect all body functions. Deficiency may due to lack of stimulation from the pituitary, defective hormone synthesis or impaired conversion of hormones. Primary deficiency stems from defective thyroid synthesis. Secondary hypothyroidism stems from pituitary gland involvement.

Allopathic approaches generally estimate thyroid function based on levels of thyroid hormone in the blood. This approach results in people with mild hypothyroidism going undetected. This is called subclinical hypothyroidism. The true rate of hypothyroidism in adults using diagnostic criteria of medical history, physical examination, blood thyroid levels along with basal body temperature is near 25%, and significantly higher in the elderly, rising to 40%.

Diagnostic Summary

- Depression, memory loss, dementia
- Difficulty in losing weight
- Dry skin, brittle hair
- Headaches
- Lethargy or fatigue
- Menstrual problems
- Recurrent infections
- Sensitivity to cold
- Carpal tunnel syndrome

Causes of hypothyroidism

- Overt hypothyroidism- 95% of cases are primary
 - Iodine deficiency- goiter
 - Excessive consumption of goitrogens- note cooking inactivates goitrogens
 - Turnips
 - Cabbage
 - Mustard
 - Cassava root
 - Soybean
 - Peanuts
 - Pine nuts
 - Millet
 - Autoimmune disorder Hashimoto's disease-antibodies bind to the thyroid receptors and prevent manufacture of sufficient levels of thyroid hormone.
- Functional hypothyroidism- functional testing reveals a incidence level of 25%
 - A person can have normal blood tests and still be thyroid-deficient because typical tests measure thyroxine (T4). T3 (triiodothyronine) affects cells most and is converted from T4. If conversion is impaired T3 will be low. This is not commonly measured via blood tests anymore due to poor accuracy (50%).
 - Functional testing measures its effect in the body via measuring a person's resting metabolic rate, which is controlled by the thyroid gland.

Diagnostic considerations

Before the advent of blood tests, functional testing was the norm along with the Achilles reflex time. These fell by the wayside with the “sophisticated” lab measurements. However routine blood tests are not sensitive enough to diagnose milder forms of hypothyroidism, the most common form, leaving many people mis/undiagnosed.

Clinical Symptomatology

- Metabolic
 - Decrease in rate of utilization of fat, protein and carbohydrates. Moderate weight gain and sensitivity to cold (cold hands and feet)
 - Increase in cholesterol and triglycerides leading to increased rate of heart disease.
 - Increase in capillary permeability leading to edema.
- Endocrine
 - Hormonal symptoms especially loss of libido in men and menstrual abnormalities in women.
 - Women experience prolonged and heavy menstrual bleeding, with shorter cycle. Infertility, miscarriages, premature deliveries and stillbirths are common.
- Skin, hair and nails
 - Among the first symptoms are depression, weakness and fatigue
 - Later symptoms include difficulty concentrating and extreme forgetfulness
- Muscular and skeletal
 - Muscle weakness, joint stiffness, as well as pain and tenderness are predominated features
- Cardiovascular
 - Increases in cholesterol and triglycerides lead to hardening of the arteries, hypertension, reduced heart function and heart rate.
- Other Symptoms
 - Shortness of breath
 - Constipation
 - Impaired kidney function
 - Other diseases
 - Dermatitis herpetiformis

Lab Evaluation

Diagnosis is primarily based on results of total T4, free T4, T3, and TSH levels.

- An elevation in TSH with normal T4 level is considered subclinical
 - Range of normal is 0.35-5.50uIU/ml, which is quite broad, treatment is not recommended unless greater than 10uIU/ml.
 - Naturopathic recommendations are more aggressive with nutritional intervention beginning at less than 2.5uIU/ml, with low-dose thyroid hormone therapy recommended above that. 2.0uIU/ml indicates a disturbance in the thyroid-pituitary axis-especially in the presence of anti-thyroid antibodies.

Functional Assessment

Indicated by basal metabolic rate, can be estimated by measuring basal body temperature, which is 97.6-98.2

- Low basal metabolic rate can also indicate nutritional deficiencies, inadequate physical activity
- High rate can result from fever, infection, other disease and ovulation

Therapeutic Considerations

Algorithm that combines clinical evaluation, basal body temperature and laboratory evaluation.

- Nutritional considerations-adequate intake of key nutrients required in the manufacture of thyroid hormones and avoiding goitrogens
 - Iodine, tyrosine and goitrogens
 - Dietary levels should not exceed 600mcg/day for any length of time. Excess can inhibit and be detrimental just as too little.
 - Tyrosine amino acid combines with iodine to make thyroid hormones
 - Goitrogens induce iodine deficiency by combining with iodine and making it unavailable. These foods include the brassica family (turnips, cabbage, rutabagas, mustard greens, radishes, horseradish), canola, cassava root, soybeans, peanuts, pine nuts, and millet. Cooking generally inactivates these goitrogens. Foods should not be eaten in excess, especially raw.
 - Vitamins and minerals
 - Zinc, Vitamin E and Vitamin A function together in the manufacture of thyroid hormone.
 - Low zinc levels are common in the elderly as is hypothyroidism
 - Zinc supplementation has been shown to reestablish normal thyroid function, even in those with “normal” T4 levels.
 - B vitamins B1, B3, B6 as well as Vitamin C are necessary
 - Trace minerals copper and selenium are required cofactors for the enzyme which converts T4 to active T3.
 - Deficiency of selenium can result in elevated levels of T4 and TSH, supplementation results in normalization.
 - Selenium is deficient in about 50% of people’s diets.
 - Selenium deficiency results in low thyroid activity in the cells even though hormone levels are normal or elevated.
 - Exercise
 - An important part of a protocol, exercise stimulates the thyroid gland secretions and tissue sensitivity.
 - Dieting decreases the metabolic rate as the body strives to conserve fuel, exercise prevents this decline.
 - Chemical sensitivities- Research has shown an association between hypothyroidism and multiple chemical sensitivities. It was found that people with exposure to toxic heavy metals, polybrominated biphenyls and carbon disulfides through their occupations suffered from depression, fatigue, poor memory and constipation which are all symptoms of hypothyroidism.
 - Thyroid hormone replacement
 - If nutritional and lifestyle intervention are inadequate to re-establish normal thyroid activity, prescription of thyroid hormones may be necessary.
 - Naturopathic approach prefers desiccated thyroid supplementation, complete with all the thyroid hormones including T4, T3 and relevant amino acids and micronutrients.
 - Equivalencies of thyroid agents
 - 1 grain desiccated thyroid
 - 100mcg of T4 (synthroid)
 - 20-25mcg T3 (cytomel)
 - 12.5 mcg T4+50mcg T4 (thyrolar)

Therapeutic Approach

Begin with optimization of the nutrients needed not only for thyroid hormone production but also for cellular conversion of T4 to T3. Thyroid hormone replacement is indicated if response is not noted within a few months.

- Diet
 - Low in goitrogens
 - High in foods rich in nutrients needed for production and activation of thyroid hormones
 - Iodine sources include sea fish, sea vegetables (dulse, kelp, wakame, arame, hijike, nori, kombu)
 - Zinc sources include seafood (oysters), beef, oatmeal, chicken, liver, spinach, nuts, and seeds.
 - Copper sources include liver and organ meats, eggs, yeast, beans, nuts and seeds
 - B Vitamin sources include yeast, whole grains, and liver
 - Selenium sources include unshelled brazil nuts
- Supplements
 - Zinc: 25mg/day
 - Copper: 5mg/day
 - Selenium: 200mcg/day
- Botanicals-some herbs will help balance hypothyroidism
 - Bladderwrack. kelp
 - Nettle, oatstraw, horsetail
 - Guggul
 - Ashwaganda, gotu kola
 - Tonic Chinese herbs- ginsengs, mushrooms
 - Coleus forskohlii
 - Essential oils applied topically: myrrh, lemongrass, palmarosa, carrot seed, myrtle, black spruce
- Physical Therapies
 - Acupuncture, acupressure, reflexology, accupoint
 - Massage
 - Hot/cold stimulation therapy

Resources include:

Encyclopedia of Natural Medicine- Michael Murray & Joseph Pizzorno

Body Reflexology- Mildred Carter & Tammy Weber

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