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An estimated 27 million Americans suffer from thyroid disease and half of them are undiagnosed or not treated. Women are seven times more likely to develop thyroid disease compared to men.

The thyroid gland is located in the neck, just below the Adam's apple. It produces a thyroid hormone called thyroxine that controls the body's metabolic rate. The thyroid gland itself is controlled by Thyroid Stimulating Hormone [TSH] secreted by the pituitary gland that is located at the base of the brain. The pituitary gland responding to stimuli from the body and based on the metabolic signals, triggers the thyroid gland to produce more thyroid hormone, and reduce the production of the Thyroid Stimulating Hormone [TSH].

Thyroid Hormone: The thyroid gland produces many hormones, of which triiodothyronine (T3) and thyroxine (T4) are important. The thyroid hormone is delivered to the body's cells via the blood. At the cellular level, the hormone helps the cells to convert the oxygen and calories into energy needed to sustain life and maintain metabolism.

The thyroid hormone controls the body's metabolism. Abnormalities of the thyroid hormone can lead to either high or low thyroid production that can have adverse effect. We encounter patients with both high and low thyroid hormone levels that have significant cardiac symptoms.

High Risk Population: Patients with a family history of thyroid disease, autoimmune disease, fibromyalgia, recent pregnancy, menopause, smoking, exposure to radiation, and chronic fatigue syndrome are at increased risk of developing thyroid problems.

Hyperthyroidism: High levels of thyroid hormone are seen mostly in young adults between the ages of 25 and 50 years. Grave's disease is where the thyroid gland is affected by an autoimmune state that leads to enlargement and excess thyroid hormone formation. It affects about 5 in 10,000 people.

Excess thyroid hormone increases the body's metabolism. Patients may present with anxiety, irritability, sleep disorders, excess sweating, changes in hair & skin, palpitations, shortness of breath, weight loss, heat sensitiveness, visual disturbances and emotional problems.

Excess hormone also leads to increased heart work. Over a prolonged period, this excess burden on the heart could lead to cardiac enlargement and heart failure. Hyperthyroidism patients also will exhibit other findings of thyroid disease such as an

enlarged thyroid gland, and bulging eyes (known as proptosis).

Hypothyroidism: Low thyroid hormone levels are seen at all ages from twenties and beyond. It can result from removal of thyroid gland, inflammation, radioactive treatment of hyperactive thyroid gland among others. An autoimmune disease called Hashimoto's Disease causes the inflammation of the thyroid gland. It is the most common cause of hypothyroidism in young people, especially women.

Hypothyroid patients may present with weakness, lethargy, lack of energy, sleepiness, weight gain, depression, swelling in the legs, constipation, loss of hair, intolerance to cold, and difficulty in concentrating or thinking. They also can develop heart failure and fluid around the heart in the pericardial sac. If untreated, it can lead to myxedema coma. The EKG may show decreased voltage. The chest X-ray may reveal a globular heart due to enlargement and fluid collection.

Diagnosis: A simple blood test can measure both the thyroid hormones (T3 & T4) and TSH. It will enable us to establish clear cut cases of high or low thyroid hormone situations. Sometimes, borderline results may not reveal the overt low thyroid state and further testing has to be done to determine whether the tests really reflect the actual condition or the results are abnormal because of other hormonal changes in the body. Radioactive iodine uptake

test is used to diagnose hyperthyroidism. Thyroid studies are also advisable during early pregnancy and in adults over the age of 50.

Other diagnostic tests include ultrasound test to determine the presence of enlargement, nodules, and cysts. The nodules can be hot or cold depending on whether they are producing hormones or not. A fine needle aspiration may be necessary, if cancer is suspected.

Treatment: The treatment of low thyroid is much easier than the treatment of high thyroid situation. When patients have low thyroid hormone, all they have to do is to replace the thyroid hormone with levothyroxin or T4 (50 to 200 micrograms), until there is enough of it in the body. This can be established by measuring the TSH level. In a hypothyroid patient the TSH levels are high. Once, the thyroid replacement is started, the TSH level drops and reaches the normal range. That will help us to guide the treatment.

It is necessary to monitor cardiac symptoms as the thyroid hormone is replaced. If the thyroid hormone is replaced aggressively, it can increase the demand on the heart and cause a new set of heart related symptoms. Too much hormone may also lead to bone loss. Hence, periodic thyroid hormone measurement and adjustment of the thyroid hormone intake is essential. Most patients need to be on thyroid replacement for the

rest of their lives. Patients with heart disease must be started on very low dose of thyroid hormone (25 to 50 micrograms) and the dose gradually increased depending on the cardiac symptoms.

The treatment of hyperthyroidism includes pills to suppress the thyroid hormone production (methimazole and propylthiouracil) and also beta blockers to minimize the cardiovascular effects. Radiation and surgery may be needed depending on the diagnosis. Total thyroidectomy is recommended when cancer is suspected.

It is crucial to recognize the hyperthyroidism at its early stage in order to prevent permanent changes in the eyes and heart.

Bio-identical hormones may be sold as a superior form of hormone replacement. However, if your disease symptoms are controlled on the synthetic hormones, then there is no need for a more expensive version. If your symptoms persist, then consult with an endocrinologist.

Disclosure: Information provided here is for educational purpose only. Please consult with your physician for any medical advice.

visit www.sugarlandheartcenter.com for a more comprehensive information on heart diseases."

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