**Thyroid and Related Diseases**

The thyroid gland regulates the rate of almost all cellular energy producing of the body. Under the influence of the thyroid-stimulating hormone (TSH) of the anterior pituitary gland, the thyroid accumulates dietary iodine and builds this element into hormones that it releases into the blood as needed. When the level of thyroid hormones in the blood falls below a critical point or rises above a critical point, the anterior pituitary gland promptly steps up or turns off its production of TSH, and this, in turn, increases or stops the secretion of the thyroid hormone.

An overproduction of thyroid hormones lead to a disease called *Hyperthyroidism*. Hyperthyroidism has several causes including: Thyroid nodules, thyroiditis, consuming too much iodine, overmedicating with synthetic thyroid hormones and Graves’ disease.

 Graves’ disease, also known as toxic diffuse goiter, is an autoimmune disorder and is the most common cause of hyperthyroidism in the USA. With Graves’ disease, the immune system makes an antibody called thyroid stimulating immunoglobulin (TSI) that attaches to the thyroid cells. TSI mimics the action of TSH and stimulates the thyroid to make too much thyroid hormone.

Clinical symptoms in patients with hyperthyroidism include; intolerance to heat, bulging eyes, facial flushing, enlarged thyroid, tachycardia, increase in systolic blood pressure, weight loss, abnormal menstrual cycle etc.

Oral manifestation in these patients include: increase susceptibility to caries and periodontal disease, enlargement of extra glandular thyroid tissue, burning mouth syndrome, accelerated dental eruption, maxillary and mandibular osteoporosis, etc.

 **The Drugs used to treat hyperthyroidism** is antithyroid medication, *Methimazole (Tapazole, Northyx)*

**Mechanism of action**: inhibits the synthesis of thyroid hormone by blocking the oxidation of iodine in the thyroid gland.

**Adverse effects**: Drowsiness, fiber, exfoliate dermatitis, skin rash, Goiter, hypoglycemic coma, constipation etc

Pregnant women should not take Methimazole because it can cross the placenta and cause fetal abnormalities.

**Hypothyroidism**

Hypothyroidism is a disorder of diverse causes in which the thyroid gland fails to secrete adequate amounts of thyroid hormone. The overwhelming majority of cases are due to primary thyroid gland failure because of chronic autoimmune (Hashimoto’s) thyroiditis, radioactive iodine therapy, or surgery.

Hashimoto’s thyroiditis is a autoimmune disorder in which the body attacks thyroid tissue and eventually dies and stops producing hormones.

Symptoms of hypothyroidism: Constipation, difficulty concentrating or thinking, dry skin, enlarged neck or presence of goiter, fatigue, hair loss, heavy and irregular periods, intolerance to cold, mild weight gain. Other symptoms that can occur with this disease are: joint stiffness and swelling of the face. This disease can also be asymptomatic.

**Drug used to treat Hypothyroidism**:

Thyroid hormone medicines, such as Levothyroxine

**Mechanism of action**:

Thyroid hormones bind to thyroid receptors in the cell DNA transcription and protein synthesis.

**Drug interaction**:

Levothyroxine may increase the level of levels/effects of vitamin K antagonist

Levothyroxine may decrease the levels/effects of Sodium Iodine

Ethanol/nutrition/Herb interaction: soybean flour, cottonseed meal, walnuts, and dietary fiber may decrease absorption of Levothyroxine from the GI tract.

**Pregnancy considerations:** endogenous thyroid hormone minimally cross the placenta: the fetal thyroid becomes active around the end of the first trimester. Levothyroxine has not been shown to increase the risk of congenital abnormalities.

To determine the right dosage of Levothyroxine initially, the doctor will check the levels of TSH after two to three months.

**Adverse effects:** fertility impaired arrhythmias, abdominal cramps, diarrhea, nervousness, etc.

**Dental Hygienist Role treating patients with Hypo/Hyperthyroidism**

Obtaining an understanding of thyroid dysfunction is of significant importance to the Hygienist for two reasons. First, the dentist may be the first to suspect a serious thyroid disorder and aid in early diagnosis. Thus, as part of a health care team, the Hygienist plays an important role in detecting thyroid abnormalities. The second reason is to avoid possible dental complications resulting from treating patients with the thyroid disorders. Modifications of dental care must be considered when treating patients who have thyroid disease. One way the dental professional can protect the thyroid gland is to use a thyroid collar while taking patient X-rays. The thyroid is extremely sensitive to radiation, and excessive radiation exposure is a known risk factor for various thyroid conditions. Consultation with the patient's primary care physician or an endocrinologist is warranted if any sign or symptom of thyroid disease is noted on examination. (1)

Stress reduction, awareness of drug side effects or interactions, and vigilance for appearance of signs or symptoms of hormone toxicity are among the responsibilities of the oral health care provider.(1)

Many signs and symptoms of thyroid disease are observable during examination of the oro-facial complex.

**Work cited**

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1. <http://www.ncbi.nlm.nih.gov/pubmed/7532241>