The thyroid gland is a small gland, measuring approximately 2 inches, lying just below the Adam’s apple of the neck. It consists of two lobes, or halves, that are connected by an isthmus – this gives it its characteristic bowtie appearance.

Though the thyroid is tiny, it is powerful. It secretes hormones that have a large impact on how our bodies function. These hormones have a big impact on our body’s metabolism; they stimulate the body tissues to produce proteins and allow our tissues to use oxygen, both of which are essential to life.

The primary thyroid hormones are –
• **Thyroxine (T3)**
• **Triiodothyronine (T4)**

**Thyroid-stimulating hormone (TSH)** is produced in the pituitary gland; this hormone does just what the name suggests – it stimulates the thyroid gland to produce more hormones.

When the hormones of the body are not at therapeutic levels, we are said to be either hyperthyroid or hypothyroid.

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### Hyperthyroidism

**Hyperthyroidism** occurs when there is too much thyroid hormone circulating in the body. The thyroid gland is overactive.

**Symptoms**

The symptoms of hyperthyroidism can mimic various other health conditions. As such, it is often misdiagnosed or may be difficult to diagnose initially.

Common symptoms of hyperthyroidism include:

- Unintentional weight loss; because the thyroid gland plays a large part in metabolism, excess thyroid hormones can increase metabolism, causing weight loss, regardless of appetite and food intake
- Tachycardia
- Irregular heartbeats
- Palpitations
- Increased appetite
- Fine, brittle hair
- Nervousness and anxiety
- Thinning of the skin
- Tremor of the hands
- Difficulty sleeping
- Sweating
- Muscle weakness
- Changes in menstrual patterns
- Increased sensitivity to heat
- Changes in bowel habits, particularly more bowel movements
- An enlarged thyroid gland (**goiter**)
- **Graves’ ophthalmopathy**, which occurs more commonly in smokers; this causes “...your eyeballs protrude beyond their normal protective orbits when the tissues and muscles behind your eyes swell.”

**Causes**

There are several causes for hyperthyroidism. Here are a few of the more common ones:

- Graves’ disease is an autoimmune disease that causes antibodies to produce excess T4 hormone. This is the most common cause of hyperthyroidism.
Though the thyroid is tiny, it is powerful. It secretes hormones that have a large impact on how our bodies function.

Hyperfunctioning thyroid nodules, such as a toxic adenoma, multinodal goiter, or Plummer’s disease, causes a nodule to produce excess thyroid hormone. These nodules are noncancerous but can cause enlargements of the thyroid gland overall.

Thyroiditis may occur after pregnancy. Thyroiditis is inflammation of the thyroid gland, and it may occur due to an autoimmune condition or for unknown reasons. This inflammation causes excess thyroid hormones to be produced.

Treatment
Treatment typically involves one of the following options:

- **Radioactive iodine** is absorbed by the thyroid gland. This causes the thyroid gland to shrink, causing symptoms to reduce within a few months. Unfortunately, treatment with radioactive iodine will cause the thyroid to become underactive – hypothyroidism – requiring replacement of thyroid hormones.

- **Anti-thyroid hormones**, such as methimazole (Tapazole) and propylthiouracil, assist the thyroid gland to produce less thyroid hormones. These medications help to

reduce symptoms within a few weeks, but must be used for at least a year. Treatment may improve the condition permanently, but some people may suffer from relapse of hyperthyroidism. Unfortunately, both medications can cause liver damage.

- **Beta blockers** are used to treat the symptoms of hyperthyroidism. Because so many people suffer from heart palpitations and rapid heartbeat, beta blockers are used as an adjunct therapy to treat hyperthyroidism.

- **Thyroidectomy** removes the thyroid gland completely. Those who are pregnant or cannot tolerate the prescribed medications may have a thyroidectomy. There are risks associated with a thyroidectomy, such as damage to the vocal cords and the parathyroid glands. In addition, lifelong supplementation with thyroid hormones will be required.

Hypothyroidism

*Hypothyroidism* occurs when there is too little thyroid hormone circulating in the body. The thyroid gland is underactive.

Symptoms

Though symptoms vary person-to-person, common symptoms of hypothyroidism include:

- Fatigue
- Weight gain
- Depression
- A puffy face
- Fertility problems
- Heavy and irregular periods
- Joint and muscle pain
- Constipation
- Dry skin
- Dry, thinning hair
- Decreased sweating

Hypothyroidism often develops slowly – as such, people with hypothyroidism may not realize that they have the disease for months or years.

Causes

Common causes of hypothyroidism include:

- **Hashimoto’s disease** is undoubtedly the most common cause of hypothyroidism. Hashimoto’s disease is an autoimmune disease that causes the body to attack the thyroid gland; this causes inflammation of the thyroid gland.

- **Thyroiditis** is an inflammation of the thyroid gland that causes a leakage of thyroid hormones into the blood. Initially, hyperthyroidism occurs. After several months, hypothyroidism develops and may become permanent.

- **Congenital hypothyroidism** occurs when a baby is born with a thyroid gland that is not fully developed or is not fully functional. Babies with congenital hypothyroidism require supplemental thyroid hormones or they may develop intellectual disabilities and growth failure.

Treatment

The generally accepted treatment for hypothyroidism is replacement of thyroid hormones. The most used treatment is levothyroxine, which is identical to the hormones that are missing or lacking in the body.

Levothyroxine should be taken on an empty stomach; it is generally recommended to take the medication prior to the first meal of the day.

Dosing of levothyroxine can be tricky; once diagnosis of hypothyroidism is achieved and treatment has begun, laboratory tests are repeated six to eight weeks after treatment to ensure that levels are therapeutic. If levels are too high or low, the dosing is adjusted. Each time the dose is adjusted, the blood test must be repeated six to eight weeks after. Once the lab test is therapeutic, the blood test is typically repeated in six months, then yearly thereafter.

Resources

