

Hypothyroidism and Hyperthyroidism

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Introduction : The thyroid gland is an endocrine gland in the neck. The gland makes two hormones that are secreted into the blood (thyroxine (T4) and triiodothyronine (T3)). These hormones are necessary for the normal function of the cells in the body, and they play a major role in the metabolism, growth and development of the human body. The thyroid gland regulates many body functions by constantly releasing a certain amount of thyroid hormones into the bloodstream. The function of thyroid gland regulate heart rate , body weight , body temperature , the nerve system and energy expenditure. (1)

Hypothyroidism

Hypothyroidism is the name given to the condition resulting from an underactive thyroid gland. This means that the thyroid is not producing enough thyroid hormone for the body's needs. (2)

Causes

- 1- Autoimmune thyroid disease – the most common cause. This is a self-destructive process in which the body's immune system attacks the thyroid cells as though they were foreign cells. The most common form is known as 'Hashimoto's thyroiditis'. (2)
- 2- Radioactive iodine treatment, or surgery, to correct hyperthyroidism or to treat thyroid cancer. (2)
- 3- Antithyroid drugs if given for an overactive thyroid disorder in a large dose. (2)
- 4- Medicines such as lithium (used for certain mental health problems) and amiodarone (used for particular heart problems). (2)

Symptoms

-  Slow heart beat
-  High level of cholesterol
-  Increased awareness of cold
-  Memory problem
-  Weight gain
-  Slowed growth (in children)

Treatment

Hypothyroidism is generally easy to treat (for most people). The easiest and most effective treatment is by taking a thyroid hormone pill named "Levothyroxine". Levothyroxine is a synthetic version of the thyroxine produced by the thyroid gland. (2)

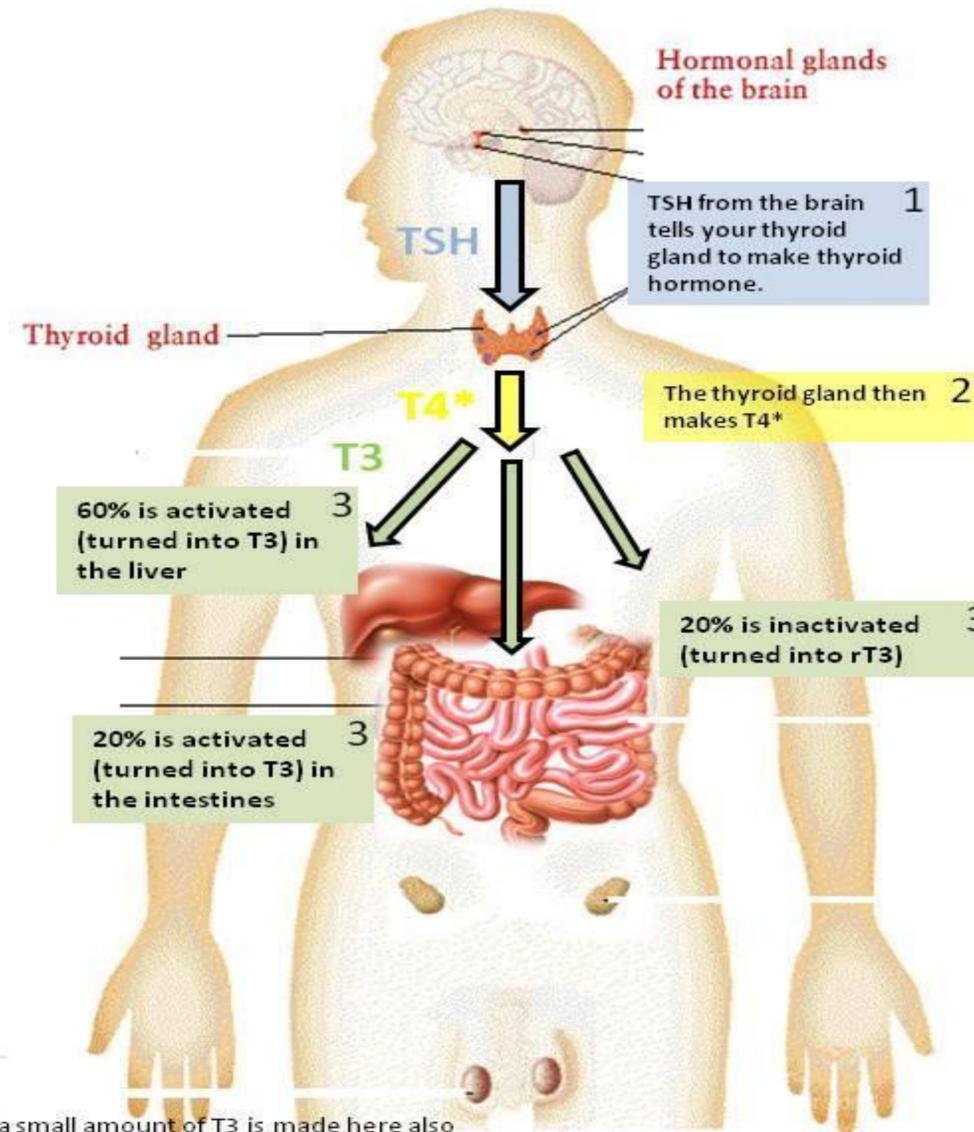


Figure1: Mechanism of action of thyroid gland

References

- 1- NCBI. (2010). How does the thyroid gland work. (Online) Available at: <https://www.ncbi.nlm.nih.gov/books/NBK279388>
- 2- Piedmont. (2018). The difference between hypothyroidism and hyperthyroidism. (Online) Available at: <https://www.piedmont.org/living-better/the-difference-between-hypothyroidism-and-hyperthyroidism>
- 3- WebMD Medical. (2017). What are the cause of hyperthyroidism. (Online) Available at <https://www.webmd.com/a-to-z-guides/causes-hyperthyroidism>.

Hyperthyroidism

Hyperthyroidism is the opposite of hypothyroidism. It occurs when the thyroid is overactive, producing too much T3 or T4 thyroid hormones. (2)

Causes

- 1- Graves disease, a common autoimmune condition that stimulates the thyroid hormones T3 and T4. (3)
- 2- Swollen thyroid. (3)
- 3- Thyroid nodules. (3)

Symptoms

-  Rapid heart rate
-  Bulging eyes
-  Feeling hot, frequently
-  Enlarged thyroid
-  Weight loss
-  Muscle weakness and tremors (2)

Treatment

Methimazole or Propylthiouracil (PTU) are used to treat hyperthyroidism by signaling the thyroid to slow down T3 and T4 hormones production. If anti-thyroid medications do not regulate the thyroid secretion then surgery is the option. The surgery removes all or part of the thyroid gland. Moreover, radioactive iodine treatment is another option used to slow the production of thyroid hormones. (2)