Hypothyroidism

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**Introduction**

Human body is a complex combination of various organs, which work in coordination with each other to keep a balance in the functions of the whole body. It is just like a complex machine that is made up of large and small parts that work in mutual coordination with each other so that the machine can work properly and produce the desired results. In the case of a human body, the large and small parts of the machine are the large and small organs, like stomach, lungs, liver, hands, legs, and feet, etc., which work in a perfect balance and maintain the different functions of the body. This balance keeps the body healthy and fit for performing different activities in daily life.

But organs are not the only actors that play a vital role in the human body; there are other actors involved as well. These actors or parts are known as “glands”. Glands are small organs in the body that secrete particular chemical substances in the body for the use at a particular location or for dispersion is the body generally. One of the most important glands in the human body is the thyroid gland. Thyroid is a small, butterfly-shaped gland that rests at the front of the neck, it produces and releases hormones that regulate the levels of energy in the body. In short, the thyroid controls the process of metabolism in the human body (Mullur, Liu, & Brent, 2014). The hormone produced by the thyroid is known as TSH (Thyroid Stimulating Hormone) and it is released in the bloodstream directly. If this gland becomes dysfunctional, the level of TSH in the blood decreases, which affects various functions of the body; this condition is known as Hypothyroidism.

**Discussion**

**What is Hypothyroidism?**

Hypothyroidism is a condition where the thyroid hormone fails to produce and release a normal quantity of the TSH (Thyroid Stimulating Hormone) in the bloodstream, which results in an abnormal level of metabolism in the human body. As TSH is the primary hormone associated with metabolism in the body, its direct effect happens on this function. Hence, it is clearly understandable that the people suffering from Hypothyroidism will have a slow metabolism.

Hypothyroidism is not an unusual disease; in fact, it is very common. It is more common than anyone can think. As per the surreys and various pieces of research, approximately 10 million Americans are suffering from this ailment currently. Almost 10% of the females have experienced a degree of hormonal deficiency or hormonal imbalance at any given stage of their life. Hypothyroidism is also known as the underactive thyroid gland.

**Symptoms of Hypothyroidism**

Many people who suffer from this disease don’t even know that they have any deficiency in their body. It happens due to the reason that the signs and symptoms of Hypothyroidism vary from individual to individuals. The symptoms also vary according to the severity of the condition. The condition becomes more critical when the disease is in its early stages. These early symptoms may not even be noticeable, as they are very mild in nature and does not affect the functioning of the body much. The earliest and most common symptoms that occur in most of the patients are fatigue and weight gain (Okosieme, 2016). These and the other symptoms start showing as the condition becomes more severe with time. The most commonly seen symptoms of Hypothyroidism in most of the patients are:

* Fatigue
* Increased sensitivity to cold temperatures
* Weight Gain
* Constipation
* Hoarseness
* Dry, rough, pale and patchy Skin
* Puffy Face
* Hair Thinning
* Coarse, Dry Hair
* Hair Loss
* Decreased Libido
* Heavy or irregular menstrual cycle
* Slowed heart rate
* Elevated blood cholesterol level
* Enlarged thyroid gland (goiter)
* Impaired memory
* Pain, stiffness or swelling in joints
* Muscle aches; tiredness, fatigue, and swelling of muscles.
* Depression
* Digestion Issues

**What Level of TSH indicates Hypothyroidism?**

Hypothyroidism can be evaluated and diagnosed by a specialist or physician, usually an endocrinologist with the help of a simple blood test. The doctor prescribes or recommends this test after closely observing the signs and symptoms in the body. The major test that is used to diagnose Hypothyroidism is checking the level of TSH in the body. The medical practitioner may prescribe to check the free thyroxin or T4, free t4 index or total T4 to diagnose the disease.

According to the physicians, 0.4 mU/L to 4.0 mU/L is the range for a normal TSH in a healthy human body. People who have a normally functioning thyroid gland usually fall within this range. If the initial tests reveal that TSH is > 4.0 mU/L, the doctor recommends a second test (t4) which is performed to verify the results in a little depth. TSH > 4.0/mU/L with a low T4 level indicates hypothyroidism.

**Causes of Hypothyroidism**

Hypothyroidism is mainly caused by two very common factors. One of the major causes of Hypothyroidism or thyroid dysfunction is the inflammation of the thyroid gland. In this case. A large percentage of the tissues or cells of the thyroid gland become damaged (or even dead), failing to sufficient quantity of TSH for a normal level of metabolism. Another, and probably the most common cause of Hypothyroidism, is autoimmune thyroiditis (also called Hashimoto's thyroiditis). It is a kind of inflammation caused by the individual’s own immune system.

One of the many other causes of Hypothyroidism that are named by the medical practitioners is the extensive medical treatments by doctors and treatments. In many cases during the treatment, of different conditions of malfunctioning of the thyroid gland, a portion or entire part of the thyroid gland is removed as a result of surgery. If the total mass of the thyroid cells present in a human body is insufficient to meet the needs of the body, it can result in hypothyroidism.

**Hypothyroidism and Emotional Changes**

Thyroid gland is not only linked to the physical functioning of the body but also the brain chemistry of a person. Along with affecting the patient physically, the under activeness of thyroid can also have a deep impact on the psychological health of an individual. Thyroid disorder can cause unpredictable mood changes and emotional distress.

Patients suffering from Hypothyroidism or underactive thyroid may feel stressed, tense and overwhelmed most of the times. They may experience depression, tearfulness, and emotional distress, on various levels. They also complain about issues like sudden mood swings and anxiety, in the form of anxiety and panic attacks. The individual may feel an overall lack of motivation and loss of interest in almost everything. The patient may have a dulling personality and may feel difficulty in concentrating or focusing on things along with memory problems.

**Can Stress Cause Hypothyroidism?**

Stress is one of the most common causes of Hypothyroidism, due to its much prevalence in the current times, it is becoming the biggest reason behind creating an underactive or malfunctioning thyroid. The thyroid gland works in coordination with adrenal glands, which are right above the kidneys. These glands can handle a limited amount of pressure and stress. When faced with pressure, the adrenal glands release cortisol that enhances the various functions of the body. Once the amount of stress exceeds the manageable limit, the adrenal glands shift the pressure towards thyroid gland which becomes hyperactive to take this pressure. The continuous transfer of this pressure causes the thyroid gland to become weak and exhausted due to continuous over-working., hence causing it to become underactive.

**Complications of Hypothyroidism**

If left untreated, the under activeness or the malfunctioning of the thyroid gland can result in much more complications. The thyroid gland is responsible for performing the most important functions in the body i.e., growth and metabolism. The hormones produced by thyroid have a great influence on

* Weight
* Body temperature
* Cardiovascular health
* Fertility

Ignorance in the case of Hypothyroidism may result in grave consequences which include heart issues, infertility, nerve injury, and even death (in severe cases). Lower levels of TSH in the bloodstream can greatly affect cardiovascular health. It can cause slow or weakened pulse, abnormal heartbeat rate and palpitations (Peeters, 2017). According to research, hypothyroidism can decrease the level of blood pumped out by the blood by 30 to 50 percent.

In severe cases of Hypothyroidism, the renal function or the function performed by kidneys is also affected as the blood flow in the kidneys becomes very low. The body may exhibit less ability to absorb sodium and excrete water out of the system, resulting in a high concentration of sodium in the blood.

**Treatment of Hypothyroidism**

Hypothyroidism is a lifelong condition. In many people, once the thyroid starts malfunctioning, it never goes back to the normal level. The medicines only reduce or alleviate the symptoms of the disease. The best and most effective treatment for Hypothyroidism so far is the use of levothyroxine (Levothroid, Levoxyl). Levothyroxine is a synthetic version of T4 hormone and it is usually used for the replication of the hormone that the body usually produces. This medicine is specially designed to restore adequate levels of TSH or T4 in the body so that the human body can maintain its normal functioning (Jonklaas, et al., 2014). Once, the medicine kicks in and the body starts regaining its normal levels of T4 in the blood, the symptoms of the disease may completely disappear or at least become much more manageable.

Once the treatment of Hypothyroidism is started, it may take several weeks for a patient to start feeling the difference. The physician usually prescribes multiple follow-up blood and hormonal tests to observe the progress and action of the medicine in the body. This whole process can take some time so the people suffering from hypothyroidism ad advised to be patient.

**What happens if Hypothyroidism is left Untreated?**

As Hypothyroidisms is directly related to the metabolism of the human body, it is understood that it affects the overall functioning of the body. It diagnosed in the early stages, the treatment of the disease becomes much easier but the treatment becomes much complex with the passage of time, as the condition becomes much severe. If left untreated, the condition may become much complicated and many organs of the body may become directly affected due to the due to the malfunctioning of the TSH producing hormone.

**Conclusion**

In a nutshell, it can be seen that the thyroid gland plays a very important role in the human body. It regulates various functions like digestive system, cardiovascular activity, renal functioning and reproduction (fertility) along with the most important task, growth, and metabolism. The under activeness or the malfunctioning of this gland causes a disease in the body is known as Hypothyroidism. The common symptoms of this ailment include, fatigue, weight gain, digestive issues, hair thinning and depression and it can be easily detected via a simple blood test. The disease does not have very serious consequences until unless it is ignored and left untreated. It can be easily treated with the help of Levothyroxine.

**References**

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