University Hospitals
Coventry and Warwickshire
NHS Trust

Endocrinology

Hypothyroidism (under active thyroid)

What is it?

Hypothyroidism is the name given to the condition resulting from an under-active thyroid which fails to produce sufficient amounts of the thyroid hormones, causing many of the body's functions to slow down.

What does the thyroid do?

The thyroid is an endocrine gland; it secretes hormones into the bloodstream. Two of these hormones thyroxine and triiodothyronine regulate your body's metabolism.

They control how quickly your body burns energy, and how quickly reactions in your body happen.

Your rate of metabolism affects lots of things, such as how much you weigh, and how much you sleep. Thyroid hormones make your cells use more energy, by controlling how much energy your cells use, thyroid hormones help to regulate your body temperature.

Hypothyroidism usually develops gradually, the symptoms may be mild and you may not notice them at first. If hypothyroidism develops, it causes a general slowing down of your body's functions.

Causes

There are a number of causes of hypothyroidism including:

- Autoimmune thyroiditis is the most common cause: a self-destructive process in which the body attacks the thyroid cells as though they were foreign cells.
- Iodine deficiency.
- Radio-iodine treatment, or surgery, or correction of thyroid over-activity, or thyroid cancer (see information on Thyroid Cancer).
- Anti-thyroid drugs: if these are given in too large a dose for too long. (see information on Hyperthyroidism due to Graves 'disease).
- Some cough medicines containing large amounts of iodine.
- Other medicines, such as Lithium (used for certain mental disorders) and Amiodarone (used to control particular irregularities of the heart beat).
- Some health foods taken in excess, e.g. kelp.

- A disorder of the pituitary gland.
- Pregnancy (see information on Thyroiditis).
- In a new born baby, the thyroid may fail to develop or fails to form the thyroid hormones properly. (See information on Congenital Hypothyroidism).

Who gets Hypothyroidism?

Hypothyroidism affects 2 women in every 100; in men it affects 2 in 1,000. It tends to be more common in older people.

What are the symptoms?

The symptoms begin so gradually that they are often not noted by either patient or doctor until the condition is well advanced. The lack of thyroid hormone, results in a slowing down of the mental and physical processes of the whole body, and is often attributed by both, the patient and doctor, to the natural ageing process or the change of life (menopause).

The following symptoms may also be experienced:

- General tiredness
- Increased awareness of the cold
- The skin may become dry and thick and feels cold
- The voice may become hoarse or croaky
- Constipation
- Muscle weakness, cramps and aches, difficulty climbing stairs
- Pins and needles in the fingers and hands
- In women of reproductive years periods may become heavier and last longer, but sometimes can prematurely stop
- A small increase in weight
- Puffy face and bags under the eyes
- Slow speech, movements and thoughts
- Slow heart beat or slightly raised blood pressure
- High cholesterol.

In rare cases, if the condition becomes very advanced, then the patient's mental state becomes disturbed and eventually, unless treated, the patient can lapse into a coma which is very serious and life threatening.

Borderline or subclinical hypothyroidism

Sometimes the degree of hypothyroidism is so slight that it can only be detected by blood tests and is not apparently causing any symptoms. The condition may nevertheless be suspected because of its possible association with other autoimmune disorders or because there is a history of thyroid trouble in the family. Once diagnosed it is likely that thyroid hormone replacement will need to be continued for life.

Diagnosis

Tests are simple and performed on a single blood sample (see information to confirm the Clinical Diagnosis").

What is the treatment?

The condition is treated with levothyroxine (thyroxine) tablets. Treatment is relatively straightforward, so long as the patient remembers to take the tablets regularly.

Thyroxine is available as a synthetic hormone which is very pure, has negligible side-effects, and virtually no allergies because it is so similar to the natural hormone previously produced by the thyroid gland. It is common for doctors to start replacement therapy cautiously in people who have severe hypothyroidism.

There are three different strengths of tablet, namely 25, 50 and 100 micrograms and they are all very small and not easy to distinguish from each other. The dose is gradually increased until the patient is taking sufficient firstly to feel better and secondly for the thyroid function tests to return to normal.

It may take several weeks or months before everything is back to normal. Most patients require some 1.6 micrograms per kilogram body weight, so in a 70 kg person typical requirement would be somewhere between 100 and 125 micrograms daily. It is important to take L-thyroxine on an empty stomach, first thing in the morning and at least 30 min before any other tablets, food or caffeine containing beverages, to facilitate more reliable absorption and therefore minimise the risk of fluctuating thyroid function tests.
Once the correct dose has been established it is unlikely to vary. An excessive amount of thyroid hormone will cause symptoms of an over-active thyroid, whereas symptoms of hypothyroidism will persist if insufficient thyroid hormone is taken. Ideally the tablet should be taken on an empty stomach.

Caution may be necessary in people who already suffer from angina or heart disease in which case it is customary for replacement therapy to be commenced in even smaller doses and increased over longer intervals.

In the event of thyroid failure occurring secondary to pituitary disease, thyroxine hormone replacement therapy is still the same as when the thyroid gland itself fails, but additional treatment of other pituitary hormone deficiencies may be necessary as well and may have to be corrected before the thyroid can be treated.

It is important that the thyroxine replacement therapy is continued for life and tablets should not be stopped, unless advised by a doctor, even if some illness develops.
It is advisable to have the thyroxine T4 level and the pituitary hormone known as the thyroid stimulating hormone TSH checked at intervals of a year or so, just to ensure you are on the correct dose of thyroxine.

Side effects or problems from treatment

These are rare due to thyroxine replacing the body's natural hormone. However some other medicines may interfere with the action of thyroxine. Always check with your GP if you start or change the dosage of other medicines including over the counter medicines such as iron tablets.

Further Information

Further information can be obtained from:

British Thyroid Foundation
01423 709707 / 01423 709448
www.btf-thyroid.org

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Department	Outpatients
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