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Patient Care + Research + Clinical Trials

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Hypothyroidism

Hypothyroidism or underactive thyroid, occurs when the thyroid gland fails to produce sufficient amounts of the main thyroid hormone T4 (levothyroxine) and another thyroid hormone (T3, lio-thyronine). There are two common causes of hypothyroidism:

1. radioactive iodine treatment of Graves' Disease (hyperthyroidism)
2. Hashimoto's thyroiditis, a common inflammatory process of the thyroid gland.

Less common causes of hypothyroidism include silent (painless or post-partum) thyroiditis and sub-acute (painful) thyroiditis. In these conditions the hypothyroidism is usually temporary.

Hypothyroidism can also be caused by disease of either the pituitary gland or the hypothalamus (together the pituitary and hypothalamus coordinate the function of the thyroid, adrenal glands and testes in a man and ovaries/periods in a woman). Another important, but transient form of hypothyroidism occurs with postpartum thyroiditis or subacute thyroiditis.

Symptoms of hypothyroidism
Hypothyroidism affects approximately 2% of the general population. It is almost 10 times as common in women as it is in men. The signs and symptoms of hypothyroidism are due mostly to the slowing of the metabolism – most individuals with hypothyroidism have one or more of the following symptoms:fatigue, weight gain, cold intolerance, dry skin & constipation. Muscle aches and pains are not uncommon. In severe cases the voice may become croaky, there may be fluid retention and brain power may diminish.

Diagnosis:
Hypothyroidism is diagnosed by finding an elevation in the level of TSH – this is the signal from the pituitary gland to the thyroid gland. Normal values are 0.3-4.8 (previously the normal value was up to 5.3). Values in the 5-10 range are suggestive of hypothyroidism (and are often referred to as “sub-clinical hypothyroidism”, while values >10 are near-diagnostic of hypothyroidism. Blood levels of thyroid hormones (T4 & T3) are usually not required. Even if the TSH is >10, the free T4 and free T3 levels are often still in the normal range.

Treatment:
Treatment of hypothyroidism is to take thyroid hormone replacement in the form of a small pill every day for ever. The pill is pure levothyroxine (T4) – there are two common brands “Synthroid” and “Eltroxin” - both are identical to the hormone that the thyroid glands makes in health. The dose of levothyroxine is usually given by weighs – 1.6 ug per kilo (or 0.7 ug per pound). Levothyroxine takes many days to weeks to work. You should not expect to feel any different after taking levothyroxine for the first few days.

Despite what you may have read or heard, there is no need to add T3 (liothyronine, “Cytomel”), since T4 breaks down to T3 in the body.

Once you have been taking the dose of levothyroxine for a month you may have your TSH remeasured – a normal value is powerful evidence that you are on the correct dose. Many endocrinologists including me recommend targeting a TSH in the lower half of the reference range (ie 0.3-2.2). Once the correct dose has been established, it is usually stable for life and patients treated with thyroxine need only have blood tests once a year. Major stress or illness can sometimes increase the need for thyroid hormone. Infants and children require smaller doses. Adult doses are given for teenage patients. Too much thyroxine causes symptoms of hyperthyroidism whereas symptoms of hypothyroidism may persist with too little.

If you miss your levothyroxine dose one day you may take a double dose the next day. It does not need to be taken with food.

Other forms of thyroid hormone are on the market – these include desiccated thyroid (from cows or pigs) – I do not recommend such formulations. T3 (liothyronine) can be used to “jump-start” individuals who are severely hypothyroid: in this case the dose is 0.5 ug/kg/day in two divided doses for 2-3 weeks. There is no good reason to continue T3 long-term.

Assuming that the diagnosis of hypothyroidism was correct, treatment for thyroid hormone should always be continued for life. The cause of thyroid failure is likely to be progressive and permanent. To ensure that the dosage of thyroid hormone is correct I recommend that the TSH level be measured annually.

Many patients are given thyroxine for the wrong reasons (such as obesity or tiredness). Therefore, it is essential that blood tests be carried out and that thyroid hormone levels are clearly shown to be below the normal range. Additionally, patients must have symptoms and signs of hypothyroidism.

Hypothyroid patients should not stop taking thyroid hormone. Thyroid hormone treatment must be continued even when the patient develops other illnesses, although the dosage may have to be altered.

Causes of hypothyroidism:
Radioactive iodine. Radioactive iodine causes hypothyroidism because the radioactivity irreversibly damages thyroid tissue. It may take many years for an individual treated with radioactive iodine to become hypothyroid.

Hashimoto's Thyroiditis
Thyroiditis, or inflammation of the thyroid gland, has many causes. The most common cause is Hashimoto's thyroiditis. This is a chronic inflammatory disorder of the thyroid gland caused by abnormal blood antibodies and white blood cells attacking and damaging thyroid cells. The end result of this so-called "autoimmune" destruction is hypothyroidism caused by the complete absence of thyroid cells. However, in many patients, sufficient thyroid reserve remains to prevent hypothyroidism.

Patients with Hashimoto's thyroiditis are usually young, middle-aged or older women. Mild cases are often associated with no symptoms however some may complain of fatigue, weight gain and hair loss. In severe cases puffiness around the eyes, ankle swelling, constipation, skin dryness and mental slowing may be observed. In the early stages there is a goitre (enlarged thyroid)

which is firm, slightly irregular, and sometimes slightly tender. Pain occurs in about 10% of cases.

The diagnosis of Hashimoto's thyroiditis is confirmed by finding high levels of auto-antibodies in the blood: the commonest auto-antibody tested in Canada is "anti-TPO" - a high level of anti-TPO antibody is not dangerous - it is simply a marker of the activity of the immune system against the thyroid. The diagnosis of Hashimoto's thyroiditis can be firmly established by doing a thyroid biopsy with a small needle. This is seldom required.

Treatment of Hashimoto's thyroiditis is to take thyroid hormone replacement (thyroxine) as described above – it is usually started at the time the diagnosis, particularly if the TSH is elevated or if there is a goitre

Temporary hypothyroidism

This may occur because of certain forms of thyroiditis - conditions that cause inflammation of the thyroid gland. The reader is referred to another article written by me on this subject.

Short URL = https://bit.ly/2YQ6kTf

Date

Patients name

Rx Synthroid

supply tab strength calculated at 1.6 ug/kg to the nearest 12.5 ug strength
take one daily
100 tabs, repeat X 3

T.G. Elliott, MBBS (specialist endocrinologist) CPSBC# 11129
Note – this prescription should not be used for any drug other than Synthroid. The insertion of any other drug into this prescription should be considered fraudulent.

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