

Hyperthyroidism: A Guide for Families

What is hyperthyroidism?

Hyperthyroidism refers to a disease in which there is excessive amount of thyroid hormone in the blood. This is generally caused by overproduction or release of thyroid hormone by the thyroid gland. Hyperthyroidism is more common in the adolescent age group, and is more frequent in girls than boys. However, it can also be found in younger children of both sexes.

What causes hyperthyroidism?

The most common cause of hyperthyroidism is Graves' disease, or autoimmune hyperthyroidism. In this situation, a person's immune system makes antibodies that stimulate the thyroid gland to become overactive. Over time, this leads to enlargement of the thyroid gland, which produces excessive amounts of thyroid hormone. Often, Graves' disease, like other autoimmune thyroid disease, runs in families. In many patients, the eyes may become prominent because of swelling of the tissues behind the eyes. Less frequent causes of hyperthyroidism include Hashimoto's thyroiditis or lymphocytic thyroiditis, which is an autoimmune disease in which there is painless enlargement of the thyroid gland, which may release thyroid hormone, thyroid tumors, or nodules that overproduce thyroid hormone, or subacute thyroiditis, probably related to a viral illness in which there is often a painful inflammation of the thyroid with release of excess thyroid hormone.

What are the signs and symptoms of hyperthyroidism?

The signs and symptoms of hyperthyroidism include:

1. Enlargement of the thyroid gland
2. Weight loss
3. Excessive sweating and feeling too warm when others are comfortable
4. Rapid heart rate and palpitations
5. Poor school performance
6. Mood swings, including irritability
7. Difficulty sleeping
8. Bulging or prominence of the eyes
9. Tremors of the hands
10. Increased frequency of bowel movements, or diarrhea

All of the above features are not necessarily seen in every child or adolescent with hyperthyroidism.

How is hyperthyroidism diagnosed?

A detailed history and thorough physical examination will point to hyperthyroidism. The blood tests to confirm the diagnosis include high blood levels of thyroid hormones T4 and T3 and decreased levels of thyroid-stimulating hormone (called TSH). A thyroid scan and uptake may be done to review thyroid shape and size, look for nodules, and check to see if the thyroid is overactive (uptake). In typical hyperthy-

roidism, free T4 and T3 are very elevated, and the TSH level is extremely low.

What is the treatment of hyperthyroidism?

Antithyroid medications

The most common method of treatment of hyperthyroidism is administration of antithyroid medication, which stops the thyroid gland from making and releasing thyroid hormone. The drug of choice is methimazole. Another antithyroid medication, propylthiouracil (PTU), is not used often in children, because it is associated with more frequent serious side effects. Methimazole can be associated with side effects including an itchy skin rash (hives), and rarely joint and muscle pains and aches, jaundice (skin and eye yellowing from a liver problem), and a low white blood cell count, which might make it hard to fight infection. If one of these side effects occurs, another form of treatment must be used. These drugs may control the disease but will not cure it. However, after 2 years of treatment, about 30% of patients may be able to safely stop medication for at least a period of time, and some may be able to stop medication forever. The advantage of this treatment in contrast to the use of radioactive iodine or surgery is that a child may not become permanently hypothyroid and need to take a thyroid pill every day.

Radioactive Iodine

Radioactive iodine is safe to use as a treatment in young people. Radioactive iodine is given in the form of an oral capsule or drink and destroys the thyroid gland over a few months, without causing major symptoms. This leads to hypothyroidism, which is the inability to make enough thyroid hormone. Radioactive iodine should never be used in a girl who is pregnant or will become pregnant very soon because of risk of damage to the unborn baby's thyroid gland. Young people treated with radioactive iodine will eventually need to take a replacement thyroid pill every day for the rest of their lives. Thyroid pills are very safe and do not interfere with normal growth and development and health.

Surgery

Surgical removal of the thyroid gland is also an effective way to treat hyperthyroidism. Risks include damage to the parathyroid glands, which are usually attached to the thyroid and control calcium in the blood, or damage to the recurrent laryngeal nerve, which is nearby and could lead to a hoarse voice. It is very important that thyroid surgery be performed by an experienced thyroid surgeon to minimize these risks. If there is a complication of antithyroid medications, family members can decide whether they prefer treatment with surgery or radioactive iodine. Surgery leads to very rapid hypothyroidism, because the thyroid gland is removed, and young

people treated with thyroid removal for their hyperthyroidism will need to take a replacement thyroid pill every day.

Beta Blockers

In the early stage of treatment, beta blockers like propranolol or atenolol are used to increase the comfort level of the young person with hyperthyroidism. These drugs will not affect thyroid hormone levels but can help in general well-being by controlling symptoms like palpitations, tremors, and anxiety as well as rapid heart rate.

All these modes of treatments will be explained by your pediatric endocrinologist, who will help you in making the appropriate choice of treatment for your child.

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