



British Society for Paediatric Endocrinology and Diabetes

HYPOTHYROIDISM IN CHILDHOOD

The thyroid gland lies in the neck at the front of the windpipe and produces a hormone called thyroxine. Thyroxine is a chemical secreted into the blood that controls the function of other organs. Thyroxine has major effects on all the organ systems of the body by controlling the rate at which they work. Inadequate secretion of thyroxine can occur at any age and is called hypothyroidism. In childhood it may be congenital (present at birth) or 'acquired' (occurring later). As the symptoms are initially mild and of gradual onset, the diagnosis is often delayed but fortunately the treatment is simple and effective.

Incidence

Congenital hypothyroidism occurs in about 1 child in 3,500 and is now picked up by screening all newborn babies. This condition is discussed in a separate 'Congenital hypothyroidism' sheet. A similar number of children develop hypothyroidism later in childhood and the diagnosis has to be made clinically on the basis of symptoms and changes in appearance and by checking the levels of thyroid hormone in the blood. This condition is the focus of this leaflet.

Cause

Hypothyroidism in childhood is usually due to an 'autoimmune' process where antibodies are formed against the cells of the thyroid gland and gradually destroy its function. There are two major forms of the later onset hypothyroidism. One is where the gland tends to enlarge to produce a thyroid swelling or goiter. This is often called 'Hashimoto's thyroiditis'. The other is where the gland is destroyed completely, often without any evidence of thyroid swelling. This is also called 'atrophic thyroiditis'. It is worth remembering that people with acquired hypothyroidism don't always fit neatly into one category and so the gland in someone with 'Hashimoto's thyroiditis' may ultimately be destroyed as it is in 'atrophic thyroiditis'.

Symptoms

In childhood thyroxine has an important role in the control of growth and one of the most fundamental signs of severe thyroid underactivity is slowing of the rate of growth. Abnormal growth tends to be a major problem when the gland gets destroyed and is not usually a major issue in children with an obvious thyroid swelling. The classical changes of adult hypothyroidism which include dryness of the skin and hair, coarsening of the facial features, constipation and a slow pulse rate all occur in children but tend to be relatively late features.

Diagnosis

Once suspected the condition is easily confirmed by measurement in the blood of thyroxine and thyroid stimulating hormone (TSH - a hormone from the pituitary gland in the brain which 'drives' the thyroid).

Treatment



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Thyroxine is available as pills containing either 25, 50 or 100 microgrammes (usually written ug) of the pure substance. Thyroxine solutions are also available and are used by some doctors. The dose in children and adolescents is closely related to size and varies from 25 to 200ug daily. The thyroxine in the body forms a 'pool' of hormone from which more active hormone is made. The adequacy of the dose is checked by measuring thyroxine and TSH in the blood from time to time. An occasional missed dose does not matter but it is important to establish a good system for remembering to take the thyroxine medicine because frequent missed doses may result in a return of symptoms and can make it very difficult for the doctor to judge what the right dose is.

Outlook

Thyroxine by mouth replaces the natural hormone and so provides excellent treatment. The child or adult with hypothyroidism is restored to full health in all respects. In those whose gland has been destroyed there is rapid catch up in growth and development and all previous symptoms resolve. There are sometimes concerns during the return to normal thyroid function in children. The change in personality and energy may be dramatic and for a while behaviour and school performance may deteriorate. Parents and teachers may be surprised by the change in behaviour although this will become less of an issue as time goes by. Other concerns may include aching of the joints and some loss of hair although this does not usually become a cosmetic problem. All these problems are transient and the child is soon fully well. No activities are barred, no illness poses a special threat and no other treatment is incompatible with thyroxine. The thyroxine needs to be taken lifelong in the case of those with atrophic thyroiditis but sometimes the autoantibodies can settle down in young people with Hashimoto's. There is therefore an argument for stopping treatment when a young person has finished growing if their thyroid problem was at the milder 'Hashimoto's' end of the spectrum. This will establish whether treatment is still needed. Autoimmune thyroid problems tend to run in families so there is an increased risk that other family members may develop thyroid disorders (either under- or over-activity) in the future.