
Goitre

Summary

- A goitre is an enlargement of the thyroid gland.
 - Causes include iodine deficiency, hyperthyroidism, hypothyroidism, thyroid nodules and thyroid cancer.
 - Treatment depends on the cause.
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A goitre is an enlargement of the thyroid gland. This gland is situated at the front of the throat, below the Adam's apple (larynx). It comprises two lobes that lie on either side of the windpipe and are joined in front by an isthmus. The thyroid gland secretes hormones to regulate many metabolic processes, including growth and energy expenditure. The thyroid gland is controlled by the pituitary gland, which is located in the brain. The pituitary prompts the thyroid to make its hormones - including thyroxine (T4) and tri-iodothyronine (T3) - by releasing thyroid-stimulating hormone (TSH). However, the thyroid can't manufacture its hormones without sufficient dietary iodine. If a person's diet is low in iodine, the pituitary keeps sending chemical messages to the thyroid, but in vain. The thyroid gland enlarges as it attempts to comply with the pituitary's demands. Apart from iodine deficiency, other causes of goitre involve conditions of the thyroid - such as nodules, cancer, hyperthyroidism and hypothyroidism.

Symptoms

The symptoms of a goitre include:

- Enlargement of the throat, ranging from a small lump to a huge mass.
- Swallowing problems, if the goitre is large enough to press on the oesophagus.
- Breathing problems, if the goitre is large enough to press on the windpipe (trachea).

Two types of goitre

Goitres are broadly classified into two groups including:

- **Endemic goitre** - in which a whole community is affected by insufficient dietary iodine. One common reason is that the soil in which foods are grown is iodine depleted. Certain areas of Australia, including Tasmania and areas along the Great Dividing Range (for example, the Australian Capital Territory), have low iodine levels in the soil. There is also evidence of a re-emergence of iodine deficiency in cities like Melbourne and Sydney. Mountainous areas and areas far from the sea are the ones most likely to be iodine deficient. However, endemic goitres tend to be more prevalent in developing countries. They are rare in developed countries because of widespread iodine supplementation.
- **Sporadic goitre** - in which only the individual is affected. Risk factors for sporadic goitre include family history, diet, age (over 40 years) and gender (women are more susceptible than men).

A range of causes

Goitre can be caused by a range of factors, including:

- Insufficient iodine in the diet.
 - High consumption of certain foods that neutralise iodine, such as cabbage, broccoli and cauliflower. Other foods, like soy, may also induce goitres.
 - Certain drugs, such as lithium and phenylbutazone.
 - Thyroid cancer.
 - Nodules growing on the thyroid gland.
 - Hyperthyroidism (overactive thyroid gland).
 - Hypothyroidism (underactive thyroid gland).
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Hyperthyroidism

Hyperthyroidism means the thyroid gland is overactive. A common cause is Graves' disease, in which the immune system produces antibodies that act like TSH and stimulate the thyroid gland uncontrollably. The gland responds by producing an excessive amount of hormones. The goitre is caused by this massive overstimulation. Some of the symptoms of hyperthyroidism include a racing and irregular heart, restlessness, unexplained weight loss, heat intolerance and diarrhoea.

Hypothyroidism

Hypothyroidism means the thyroid gland is underactive. The pituitary gland keeps sending its chemical messages, instructing the thyroid to produce its hormones. The thyroid gland enlarges as it attempts to comply. Apart from iodine deficiency, other causes of hypothyroidism include Hashimoto's disease (which, like Graves' disease, is an autoimmune disease), treatment for hyperthyroidism, and dysfunction of the pituitary gland. Some of the symptoms of hypothyroidism include low energy, depression, cold intolerance and constipation.

Thyroid nodules

Thyroid nodules are lumps that grow on the gland. Nodules are classified into two groups:

- **Hot or warm** - these nodules account for around 15 per cent of cases, and can cause hyperthyroidism. The cancer risk is low.
- **Cold** - these nodules account for around 85 per cent of cases. Around 20 per cent of these are cancerous.

Thyroid cancer

Sometimes, the thyroid gland is enlarged because of cancer. Anyone can develop thyroid cancer, regardless of age or gender. The incidence rates are very low and the cure rate is very good. Some of the risk factors include:

- **Chronic goitre** - persistent enlargement of the thyroid gland.
- **Family history** - a susceptibility to thyroid cancer can be inherited.
- **Gender** - more women than men develop thyroid cancer.
- **Radiation exposure** - high doses of radiation were used during the 1950s to treat disorders of the throat and skin.

Diagnosis methods

A goitre, and its underlying causes, is diagnosed using a number of tests, including:

- Physical examination
- Blood tests - to check for thyroid hormone levels and particular antibodies
- Ultrasound scan
- Fine needle biopsy
- Radioactive iodine scan.

Treatment options

Treatment depends on the underlying cause:

- **Goitre caused by iodine deficiency** - can be helped with the introduction of iodine-rich foods into the diet, such as seafood and iodised salt.
- **Hyperthyroidism** - is managed with drugs that slow the activity of the thyroid. If these fail to work, part or all of the thyroid gland is surgically removed. Alternatively, some or all of the thyroid's hormone-producing cells can be destroyed with radioactive iodine treatment.
- **Hypothyroidism** - is treated by lifelong hormone replacement therapy.
- **Benign thyroid nodules** - are shrunk with medications, destroyed with radioactive iodine treatment or surgically removed, depending on the type.
- **Cancer of the thyroid** - is treated by surgical removal of the gland, followed by radioactive iodine treatment.

Where to get help

- Your doctor

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