

# MORBUS BASEDOW



SCHILDDRÜSEN-LIGA  
DEUTSCHLAND E.V.

Umbrella organisation of self-help groups for thyroid  
sufferers and their relatives

Member of the Thyroid Federation International (TFI)

A large, detailed close-up of a human eye, showing the iris, pupil, and eyelashes. The eye is looking slightly to the left. The image is in grayscale and serves as a background for the lower half of the page.

*Just a minute!*

Sleep problems  
Fits of rage  
Depressions  
Fatigue  
Increase in weight  
Nervousness

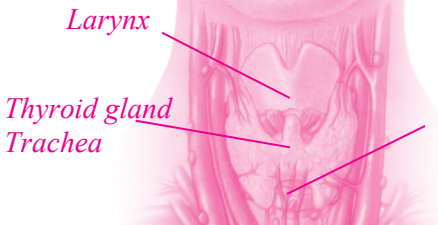
## *The thyroid gland*

The thyroid is a small hormone gland many people are not aware of. It is located in front of the larynx and can normally not be felt. Although it is of paramount importance, it is not felt until it attracts attention by its rebellious behaviour.

**Together with you**, we will make sure that your thyroid remains peaceful.

**The Schilddrüsen-Liga** Deutschland e.V. has committed itself to bring thyroid experts and patients together around one table. The targets are the promotion of the knowledge about the diseases of the thyroid, its prevention, early detection and best possible treatment.

This also requires the cooperation of an **informed patient**. In addition, the **Schilddrüsen-Liga Deutschland e.V. wishes to support** patients and their relatives in the foundation of self-help groups.



## *Morbus Basedow*

The name of Morbus Basedows refers to the person who was the first to describe this disease and lived from 1799 to 1854. Dr. Basedow described the combination of an thyroid enlargement which is concomitant with palpitations and bulging eyes. Today, we know that the disease is based on a malfunction in the immune system, causing a hyperthyroidism. This causes the heart palpitations and other symptoms of the hyperthyroidism. The eye symptoms are also caused by a dysregulation in the immune system. Thanks to today's better diagnostic possibilities, the diagnosis can also be made if not all symptoms exist.

### **Causes:**

In case of the Basedow's disease, auto-antibodies which are directed against a thyroid cell receptor, with the receptor normally controlling the production of thyroid hormones, trigger the disturbance of the thyroid hormone production and release. These are the so-called TSH receptor antibodies. In most cases these antibodies lead to a stimulation of the thyroid cells, resulting in a hyperthyroidism with an increased hormone production. However, a blockage of the receptors is possible in some cases. In these cases there is a thyroid insufficiency. The reason why the immune system produces TSH receptor antibodies is only partially known. Due to the accumulation in families, a certain propensity can be assumed.

Also, certain genes, in particular on chromosome 6, are known for their increased susceptibility to this disease. In addition, there must be other triggering factors for an outbreak of this disease. For example, infectious diseases and stress situations may be of importance.

Basedow's disease occurs more frequently with women than with men. In particular during phases of the hormone changeover such as the puberty and the menopause as well as the time after a pregnancy are subject to an increased risk of a disease.

Smoking is another risk factor. This risk factor particularly involves the eyes, the so-called endocrine orbitopathy, which affects smokers significantly more frequently than non-smokers.

### **Symptoms:**

In most cases the symptoms of the hyperthyroidism are in the centre, including e.g. palpitations, hot flushes with an increased tendency to sweating, nervousness and shivering, change of mood, weight loss and watery bowel movements. Even the appetite is often increased. The menstruation may fail with women.

During the disease the thyroid is often enlarged, resulting in a thickening of the neck. However, a lot of patients have a thyroid of a normal size without corresponding symptoms in the neck area.

If an endocrine orbitopathy, i.e. an involvement of the eyes during this disease, exists, the first symptoms are often sensitive eyes with an increased dryness but also an increased trickle of tears, an increased sensitivity to light and a

a feeling of pressure behind the eyes. Also, a swelling of the tissue around the eyeball and a protrusion of the eyeballs from the eye socket may occur during the further progress. In particular, there may be double visions, in particular if this does not occur on both sides to the same extent. They can often be found in certain viewing directions only. A protrusion of the eyeballs sometimes prevents the closure of the eyelids because of the protrusion of the eyeballs. In such a case, the eyes are not completely closed during the sleep, with the risk of a dehydration.

The office of the Schilddrüsen-Liga Deutschland e. V. (German Thyroid League) can provide a leaflet on the endocrine orbitopathy on request.

Another involvement of the disease outside the thyroid may be the occurrence of a so-called pretibial myxoedema. This is a swelling of the tissue in the area of the skin in front of shin bones.

This can be found with approx. 10% of all people suffering from the Basedow's disease. However, it is not much manifest in most cases and hardly causes complaints.

### **Diagnosics:**

The diagnosis is based on a exact clinical examination as well as the determination of the thyroid hormone values, in particular of the thyroid auto-antibodies. If a hyperthyroidism exists and the eyes or the skin in front of the shin bone additionally show typical changes, the diagnosis can already be regarded as certain. However, if the eyes and skin show no indications of the disease, the determination of TSH receptor antibodies cannot be

dispensed with . If they are positive, there are hardly doubts about the diagnosis. Only in very rare cases can these thyroid auto-antibodies be identified in other diseases as well.

The ultrasound examination measures the size of the thyroid. However, the low-echo, i.e. very dark tissue structure, is more typical than in an enlargement. In addition, ultrasound devices which can also show the blood circulation provide evidence of an increased blood circulation in the area of the thyroid gland tissue, in particular if the disease is very active.

The thyroid scintigraphy shows a high accumulation of the radioactive substance in the thyroid gland as a manifestation of an increased metabolic activity.

### Therapy:

The treatment of hyperthyroidism is based on medications which slow down the thyroid hormone synthesis. The active substances used for that are thiamazole, carbimazole or propylthiourazil. Miscellaneous companies produce these substances under different names. These are medications which are subject to a prescription. The dose is selected in dependence of the extent of the hyperthyroidism, the symptoms as well as the size of the thyroid.

A so-called beta-blocker may additionally be useful for a treatment of the hyperthyroidism for improving a lot of symptoms of the hyperthyroidism without influencing the laboratory values appreciably. The medicative therapy for the Basedow's disease takes 6 to 12, and sometimes even 18 months, under regular laboratory

control with an adjustment of the medication dose. It is then possible to stop the medication with approximately half of the patients without new outbreak of the hyperthyroidism. However, if hyperthyroidism occurs again or a stoppage of the medication is not possible at all, a radioiodine therapy or a thyroid surgery must be considered. The medications used for the treatment of hyperthyroidism are generally well tolerated, they may have dangerous side effects in rare cases. Above all, a disturbance of the production of certain white blood cells must be mentioned here, which is accompanied by an increased susceptibility to infections so that the body can no longer defend itself properly against bacterial infections. If these medications are taken in and very high fever occurs, a blood test is absolutely necessary. This is the main reason for the fact why an intake of these medications cannot generally be recommended for an indefinite period of time.

In the radioiodine therapy, the patient receives a capsule with radioactive iodine. This accumulates in the thyroid and leads to a damage to the thyroid cells so that they can no longer produce hormones. The surgical therapy removes almost all of the thyroid tissue. The so-called Dunhill operation is common today, removing the thyroid lobe completely and only leaving a part about of the size of an olive. If more thyroid tissue is left, the danger that a hyperthyroidism later occurs once again is higher, so this should be avoided as far as possible. A successful radio-

iodine therapy or an operation will therefore no longer leave a sufficient amount of functional thyroid tissue so that a thyroid hormone intake which is normally necessary for the lifetime must be initiated.

If the eyes are involved, the symptoms may significantly improve with an adjustment of the hormonal situation by the medications. In addition, a consequent avoidance of nicotine, passive smoking as well, is absolutely necessary. Furthermore, a strong sun radiation to the eyes should be avoided so that the wearing of sunglasses is recommended. Also, a draught of air can worsen the symptoms. In addition, artificial tears and a nourishing eye ointment may be helpful. Severer cases sometimes require a cortisone treatment which often improves the complaints in the area of the eyes. In addition, the ray treatment of the tissue behind the eyeball may be useful, in particular if double vision exists. The decision on a cortisone therapy or a radiation must be made by a doctor who is very familiar with this disease.

An intake of iodine is not recommended for autoimmune thyroid diseases since the autoimmune process can be intensified by that. Therefore, food supplements containing iodine should be avoided. Whether or not a low iodine nutrition (e.g. no sea fish) additionally has a favourable influence on the autoimmune thyroid diseases, has not been clarified yet.

### **Progress checks:**

After the beginning of the medicative therapy, regular control tests are first required at relatively



short intervals for an adjustment of the medication dose. In addition, a control test is absolutely required in case of high fever to identify the side effects of the medicative treatment in time. If the medication dose must be reduced during the progress or relatively stable circumstances have appeared, the test intervals may be extended to approximately 3 months. Later, a new determination of the thyroid auto-antibodies is helpful since the probability of stopping the medications is low in case of permanently high TSH receptor antibodies.

In such cases a decision will possibly have to be made earlier on a radioiodine therapy.

If the thyroid function has normalised under the medicative treatment and this treatment is discontinued, the thyroid values should be tested again after approx. 3 months to determine as to whether or not there was a recurrence. After that, the tests can be made at larger intervals. The frequency of tests in case of an attack to the eyes cannot generally be stated since the progress is very variable. Whenever a patient registers a worsening of the symptoms, it would be better to perform too many than too few tests. A close cooperation of endocrinologists and ophthalmologists is absolutely necessary here. Prior to medical examinations with iodine-containing contrast media (e.g. kidneys, gall bladder, bones, heart . . .), it is absolutely necessary that the examining doctor be informed about the thyroid disease.

## *Laboratory values*

### **TSH:**

Thyroid Stimulating Hormone. This hormone is produced in the pituitary gland and controls the thyroid function.

### **T<sub>3</sub> or fT<sub>3</sub>:**

Triiodothyronine is a highly efficacious thyroid hormone. Approx. 10% of the thyroid hormone is released in this form in healthy persons. T<sub>3</sub> can be measured in the blood where the largest part of the hormone is bonded to the protein and serves as a hormone supply.

Also, the free hormone, i.e. the hormone not bonded to the protein, can be measured. Then, the laboratory findings often show fT<sub>3</sub>.

### **T<sub>4</sub> or fT<sub>4</sub>:**

Tetraiodothyronine, also called thyroxine. Approx. 90% of the thyroid hormone is released by the thyroid in this form. It is converted to the highly active T<sub>3</sub> takes partially in the liver but also in other tissues where the thyroid hormone is needed.

### **TPO-AB and TG-AB:**

Thyroperoxidase antibodies and thyroglobulin antibodies. These are antibodies produced by the immune system and are directed against the thyroid protein thyroperoxidase or thyroglobulin. If these antibodies can be detected in the blood, this may indicate an autoimmune disease of the thyroid.

### **TRAB:**

TSH receptor antibodies. They are produced by the immune system, like TPO-AB and TG-AB. These antibodies are directed against the TSH receptor

and may activate or block it. TRABs can be detected in the blood of patients suffering from a Basedow thyroid disease.

**Thyroglobulin:**

This is a form of an accumulation of the thyroid hormone in the thyroid. This substance is produced by thyroid cells only. During the aftercare of patients suffering from a papillary or follicular thyroid carcinoma, this substance is measured in the blood for an early detection of a recurrence.

**Calcitonin:**

This is a hormone which is produced in a small number of thyroid cells which do not belong to the cells which actually produce the thyroid hormone. In case of a rare tumour form of the thyroid, the medullary thyroid carcinoma, this value is almost always elevated in the blood.

**Thyroid sonography:** Ultrasound examination of the thyroid. This allows an exact measurement of the thyroid size, a judgement of the tissue structure as well as a detection and measurement of nodal changes and cysts.

**Thyroid scintigraphy:**

This process is used to generally inject a low-radioactive substance which accumulates in the thyroid. After approx. 20 minutes, the distribution of the substance in the thyroid can then be analysed. An accumulation is high where much iodine is absorbed, e.g. in the bones which produce the thyroid hormone (hot nodes). Nodes which do not show any accumulation are referred to as cold nodes.

**Fine-needle puncture:**

A very thin needle is inserted into the thyroid through the skin to obtain some cells for a microscopic examination. In most cases, this examination is not more painful than a withdrawal of blood. In particular, cold nodes (see thyroid scintigraphy) should be punctured since they sometimes obscure thyroid carcinomas.



