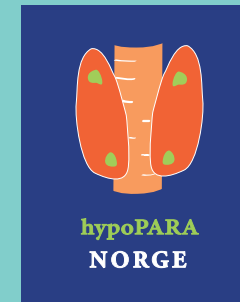
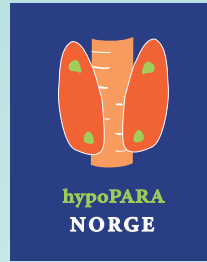


hypoPARA NORGE (hypoPARA NORWAY) (former: Nordic hypoPARA Organisation) is a patient driven non-profit alliance for patients with the disease Hypoparathyroidism, and their close relatives, in Norway.

Interested professionals may also become associated members. It was founded and officially registered on November 24th, 2005.

THE ORGANISATION PROPOSES TO PROMOTE ACTIVITIES IN FAVOR OF:

- **Access to information and support for members with the disease.**
- **Increasing contact between members with this rare disorder.**
- **Offering information and advice through our website, social networks and telephone helpline.**
- **Cooperation with our medical consultants.**
- **Raising public, government and medical awareness of the disease.**
- **Campaigning for national guidelines, better treatment and clinical trials.**
- **Promoting and following clinical research and the exchange of good medical practices.**



Hypoparathyroidism

hypoPARA NORGE is a member of EURORDIS (European Organisation for Rare Diseases) since 2006. We are approved to apply for official operating grants for disabled Organizations through the Norwegian Directorate for Children, Youth and Family Affairs. We are a member of the Norwegian ExtraFoundation for Health and Rehabilitation.



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Hypoparathyroidism



Hypoparathyroidism is due to insufficient function of the parathyroid glands. ***This disease is NOT related to the thyroid glands (hypothyroidism).***

The function of the four parathyroid glands is to produce parathyroid hormone (PTH). PTH has several functions in the body.

PTH performs its effect on target cells, through binding to receptors on the cell membrane. This binding is modulated by so-called G-proteins, and affects many different functions inside the cells, all the way to the cell nucleus.

The **most important** function of the hormone is to regulate the calcium and phosphate ion levels in the blood, and inside the cells of our body.

Normal levels of calcium electrolytes in the blood are essential to many functions in the body:

1. Muscle contractions
2. Nerve function
3. Neuromuscular contractions
4. Heart contractions and rhythm
5. Blood coagulation
6. Hormone and neurotransmitter release
7. Bone resorption and formation (bone remodeling)

Calcium ions in the blood are normally regulated within a very narrow normal range and with an individual variation of max. 1 %. In hypopar-

athyroidism, the individual variation increases significantly.

Insufficient PTH reduces the release of calcium ions from the bones into the blood, and increases the loss of calcium through the kidneys. Insufficient PTH also lowers the absorption of calcium from food in the intestines via impaired synthesis of vitamin D. All of which lead to lower blood calcium ion concentrations.

The active vitamin D (Calcitriol), which is used in the treatment of the disease today, does not resolve all the lost functions from lack of parathyroid hormone.

The main symptoms of decreased parathyroid function are low blood calcium concentrations (hypocalcaemia) and high blood phosphate concentrations (hyperphosphatemia). Low blood magnesium (hypomagnesemia) is also a common symptom.

Symptoms: In the worst cases of low levels of calcium electrolytes in the blood, severe muscle spasms can occur throughout the whole body. Very low calcium levels can also cause a prolonged QT interval in the heart, low blood pressure and heart failure.

Symptoms of chronic hypoparathyroidism include muscle spasms in the hands and feet, numbness and tingling around the mouth, in fingers, toes and legs. Swelling and painful feet, are also common. Symptoms may also include tiredness and confusion. Extra-pyramidal symptoms (similar to the symptoms seen in Parkinson's disease) may occur over time and are caused by calcification of structures deep in the brain. Calcification of the kidneys and other organs may occur, as may cataracts in the eye.

Nerve pain can also occur, similar to that seen in polyneuropathy. Bone pain and muscle pain/weakness is common. Muscle pain may increase with activity.

Hypoparathyroidism can be congenital or acquired. There are many different reasons for its occurrence with the following being the most common:

CONGENITAL:

Idiopathic hypoparathyroidism means that the reason for the decreased function is unknown.

Isolated hypoparathyroidism. Hypoparathyroidism can occur sporadically. A familial form of the disease also exists with several siblings or generations in the same family may exhibit hypoparathyroidism.

Di George Syndrome is a disease, which may be characterized by an underdevelopment of the parathyroid glands. The disease APS 1 also presents with hypoparathyroidism. In both cases there will also be other manifestations.

Pseudohypoparathyroidism (Albright Hereditary Osteodystrophy) occurs when the production of the parathyroid hormone is intact, but bone and kidney cells are incapable of responding to the hormone.

ACQUIRED:

Hypoparathyroidism after injury (Iatrogenic hypoparathyroidism). The four tiny parathyroid glands are located right behind the thyroid glands. Surgery in this area may lead to injury/removal of these tiny glands. Radiotherapy to this area may also damage the parathyroid glands.

Autoimmune hypoparathyroidism. The immune system can, for unknown reasons, create antibodies (autoimmunity), which may destroy parathyroid cells over time.

This leaflet has been edited and quality secured by Professor Erik Fink Eriksen, Department of Endocrinology, Oslo University Hospital, Aker. Norway.