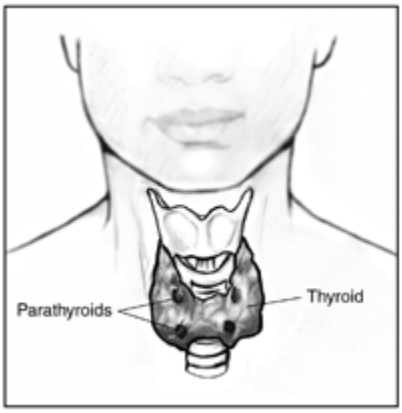
Hyperparathyroidism

Primary hyperparathyroidism is a disorder of the parathyroid glands, also called parathyroids. “Primary” means this disorder originates in the parathyroids: One or more enlarged, overactive parathyroid glands secretes too much parathyroid hormone (PTH). In secondary hyperparathyroidism, a problem such as kidney failure causes the parathyroids to be overactive. This publication focuses on primary hyperparathyroidism.

What are the parathyroid glands?



The parathyroid glands are four pea-sized glands located on the thyroid gland in the neck. Occasionally, a person is born with one or more of the parathyroid glands embedded in the thyroid, in the thymus, or located elsewhere around this area. In most such cases, however, the glands function normally.

Though their names are similar, the thyroid and parathyroid glands are entirely different glands, each producing distinct hormones with specific functions. The parathyroid glands secrete PTH, a substance that helps maintain the correct balance of calcium and phosphorus in the body. PTH regulates the level of calcium in the blood, release of calcium from bone, absorption of calcium in the intestine, and excretion of calcium in the urine.

When the level of calcium in the blood falls too low, the parathyroid glands secrete just enough PTH to restore the blood calcium level.

What is hyperparathyroidism?

If the parathyroid glands secrete too much hormone, as happens in primary hyperparathyroidism, the balance is disrupted: Blood calcium rises. This condition of excessive calcium in the blood, called hypercalcemia, is what usually signals the doctor that something may be wrong with the parathyroid glands. In 85 percent of people with primary hyperparathyroidism, a benign tumor called an adenoma has formed on one of the parathyroid glands, causing it to become overactive. Benign tumors are noncancerous. In most other cases, the excess hormone comes from two or more enlarged parathyroid glands, a condition called hyperplasia. Very rarely, hyperparathyroidism is caused by cancer of a parathyroid gland.

This excess PTH triggers the release of too much calcium into the bloodstream. The bones may lose calcium, and too much calcium may be absorbed from food. The levels of calcium may increase in the urine, causing kidney stones. PTH also lowers blood phosphorus levels by increasing excretion of phosphorus in the urine.

Why are calcium and phosphorus so important?

Calcium is essential for good health. It plays an important role in bone and tooth development and in maintaining bone strength. Calcium is also important in nerve transmission and muscle contraction.

phosphorus is found in all bodily tissue. It is a main part of every cell with many roles in each. Combined with calcium, phosphorus gives strength and rigidity to your bones and teeth.

What causes hyperparathyroidism?

In most cases doctors don't know the cause. The vast majority of cases occur in people with no family history of the disorder. Only about 5 percent of cases can be linked to an inherited problem. Familial multiple endocrine neoplasia type 1 is a rare, inherited syndrome that affects the parathyroids as well as the pancreas and the pituitary gland. Another rare genetic disorder, familial hypocalciuric hypercalcemia, is sometimes confused with typical hyperparathyroidism. Each accounts for about 2 percent of primary hyperparathyroidism cases.

How common is hyperparathyroidism?

In the United States, about 100,000 people develop the disorder each year. Women outnumber men two to one, and risk increases with age. In women 60 years and older, two out of 1,000 will develop hyperparathyroidism each year.

What are the symptoms of hyperparathyroidism?

A person with hyperparathyroidism may have severe symptoms, subtle ones, or none at all. Increasingly, routine blood tests that screen for a wide range of conditions, including high calcium levels, are alerting doctors to people who have mild forms of the disorder even though they are symptom-free.

When symptoms do appear, they are often mild and nonspecific, such as a feeling of weakness and fatigue, depression, or aches and pains. With more severe disease, a person may have a loss of appetite, nausea, vomiting, constipation, confusion or impaired thinking and memory, and increased thirst and urination. Patients may have thinning of the bones without symptoms, but with risk of fractures. Increased calcium and phosphorus excretion in the urine may cause kidney stones.

How is hyperparathyroidism diagnosed?

Hyperparathyroidism is diagnosed when tests show that blood levels of calcium and parathyroid hormone are too high. Other diseases can cause high blood calcium levels, but only in hyperparathyroidism is the elevated calcium the result of too much

parathyroid hormone. A blood test that accurately measures the amount of parathyroid hormone has simplified the diagnosis of hyperparathyroidism.

Once the diagnosis is established, other tests may be done to assess complications. Because high PTH levels can cause bones to weaken from calcium loss, a measurement of bone density can help assess bone loss and the risk of fractures. Abdominal images may reveal the presence of kidney stones and a 24-hour urine collection may provide information on kidney damage, the risk of stone formation, and the risk of familial hypocalciuric hypercalcemia.

How is hyperparathyroidism treated?

Surgery to remove the enlarged gland (or glands) is the main treatment for the disorder and cures it in 95 percent of operations.

Calcimimetics are a new class of drug that turns off secretion of PTH. They have been approved by the Food and Drug Administration for the treatment of hyperparathyroidism secondary to kidney failure with dialysis, and primary hyperparathyroidism caused by parathyroid cancer. They have not been approved for primary hyperparathyroidism, but some physicians have begun prescribing calcimimetics for some patients with this condition. Patients can discuss this class of drug in more detail with their physicians.

Some patients who have mild disease may not need immediate treatment, according to panels convened by the National Institutes of Health (NIH) in 2002. Patients who are symptom-free, whose blood calcium is only slightly elevated, and whose kidneys and bones are normal may wish to talk with their physicians about long-term monitoring. In the 2002 recommendation, periodic monitoring would consist of clinical evaluation, measurement of serum calcium levels, and bone mass measurement. If the patient and physician choose long-term follow-up, the patient should try to drink lots of water, get plenty of exercise, and avoid certain diuretics, such as the thiazides. Immobilization (inability to move) and gastrointestinal illness with vomiting or diarrhea can cause calcium levels to rise. Patients with hyperparathyroidism should seek medical attention if they find themselves immobilized, vomiting, or having diarrhea.

Are there any complications associated with parathyroid surgery?

Surgery for hyperparathyroidism is highly successful with a low complication rate when performed by surgeons experienced with this condition. About 1 percent of patients undergoing surgery experience damage to the nerves controlling the vocal cords, which can affect speech. One to 5 percent of patients lose all their parathyroid tissue and thus develop chronic low calcium levels, which may require treatment with calcium or vitamin D. The complication rate is slightly higher for hyperplasia than it is for adenoma since more extensive surgery is needed.

Are parathyroid imaging tests needed before surgery?

The NIH panels recommended against the use of expensive imaging tests to locate benign tumors before initial surgery. Such tests are not likely to improve the success rate of surgery, which is about 95 percent when performed by experienced surgeons. Simple imaging tests before surgery are preferred by some surgeons. Localization tests are useful in patients having a second operation for recurrent or persistent hyperparathyroidism.

Which doctors specialize in treating hyperparathyroidism?

Endocrinologists are doctors who specialize in hormonal problems. Nephrologists are doctors who specialize in kidney and mineral disorders. Along with surgeons who are experienced in endocrine surgery, endocrinologists and nephrologists are best qualified to treat people with hyperparathyroidism. Organizations that help people with hyperparathyroidism may have additional information to assist in finding a qualified health professional nearby.

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