# Pituitary disorders

**What are pituitary disorders?**

Pituitary disorders are conditions caused by too much or too little of one or more of the hormones produced by the pituitary gland. A pituitary tumor compressing surrounding tissues can also cause symptoms of a pituitary disorder.

The pituitary gland is part of the endocrine system, a very complex network that consists of various glands located throughout the body. The glands produce hormones that affect processes throughout the body.

The pituitary is a pea-sized gland in the center of the head behind the sinus cavity, at the bottom of the brain, below the hypothalamus. The hypothalamus communicates with other parts of the brain and nervous system to regulate the body. It sends hormones that signal the pituitary to start or stop producing hormones. Hormones produced by the pituitary travel to other glands throughout the body and stimulate them to produce different hormones.

The pituitary has two parts: the anterior (front) and the posterior (back), which produce different hormones:

- The anterior pituitary produces growth hormone (GH), adrenocorticotrophic hormone (ACTH), thyroid-stimulating hormone (TSH), luteinizing hormone (LH), follicle-stimulating hormone (FSH), and prolactin. These hormones help regulate bone growth, muscle mass, the body's response to stress, blood sugar, the rate at which the body uses energy (metabolic rate), the development of secondary sexual characteristics, and fertility, They affect specific "target" tissues throughout the body, including the thyroid gland, adrenal glands, ovaries (women), and testicles (men).

- The posterior pituitary stores oxytocin and antidiuretic hormone (ADH), which are produced in the hypothalamus. ADH controls the amount of water that the kidneys release, which in turn helps regulate the balance of water in the body. Oxytocin stimulates the contraction of the uterus during and after childbirth and is responsible for stimulating the release of milk during breastfeeding.

Pituitary disorders causing the production of too much or too little pituitary hormone can produce a variety of symptoms depending on which hormones and target tissues are affected.

## 1. Prolactinoma

Prolactinoma is a condition in which a noncancerous tumor (adenoma) of the pituitary gland in your brain overproduces the hormone prolactin. The major effect is decreased levels of some sex hormones — estrogen in women and testosterone in men.

Although prolactinoma isn't life-threatening, it can impair your vision, cause infertility and produce other effects. Prolactinoma is the most common type of hormone-producing tumor that can develop in your pituitary gland.

## Symptoms

There may be no noticeable signs or symptoms from prolactinoma. However, signs and symptoms can result from excessive prolactin in your blood (hyperprolactinemia) or from pressure on surrounding tissues from a large tumor. Because elevated prolactin can disrupt the reproductive system (hypogonadism), some of the signs and symptoms of prolactinoma are specific to females or males.

In females, prolactinoma can cause:

- Irregular menstrual periods (oligomenorrhea) or no menstrual periods (amenorrhea)
- Milky discharge from the breasts (galactorrhea) when not pregnant or breast-feeding
- Painful intercourse due to vaginal dryness
- Acne and excessive body and facial hair growth (hirsutism)

In males, prolactinoma can cause:

- Erectile dysfunction
- Decreased body and facial hair
- Uncommonly, enlarged breasts (gynecomastia)

In both sexes, prolactinoma can cause:

- Low bone density
- Reduction of other hormone production by the pituitary gland (hypopituitarism) as a result of tumor pressure
- Loss of interest in sexual activity
- Headaches
- Visual disturbances
- Infertility

## Causes

Prolactinoma is one type of tumor that develops in the pituitary gland. The cause of these tumors is unknown.

The pituitary gland is a small bean-shaped gland situated at the base of your brain. Despite its small size, the pituitary gland influences nearly every part of your body. Its hormones help regulate important functions such as growth, metabolism, blood pressure and reproduction.

Other possible causes of prolactin overproduction include medications, other types of pituitary tumors, an underactive thyroid gland, ongoing irritation to the chest, pregnancy and breast-feeding.

**Complications**

Complications of prolactinoma may include:

- **Vision loss.** Left untreated, a prolactinoma may grow large enough to compress your optic nerve.
- **Hypopituitarism.** With larger prolactinomas, pressure on the normal pituitary gland can cause dysfunction of other hormones controlled by the pituitary, resulting in hypothyroidism, adrenal insufficiency and growth hormone deficiency.
- **Bone loss (osteoporosis).** Too much prolactin can reduce production of the hormones estrogen and testosterone, resulting in decreased bone density and an increased risk of osteoporosis.
- **Pregnancy complications.** During a normal pregnancy, the production of estrogen increases. If you are pregnant and have a large prolactinoma, these high levels of estrogen may cause tumor growth and associated signs and symptoms, such as headaches and changes in vision.

**Diagnosis**

If you have signs and symptoms that suggest you have prolactinoma, your doctor may recommend:

- **Blood tests.** Blood tests can detect the overproduction of prolactin and whether levels of other hormones controlled by the pituitary are within the normal range. Women of childbearing age also will have a pregnancy test.
- **Brain imaging.** Your doctor may be able to detect a pituitary tumor on an image generated by a magnetic resonance imaging scan of your brain.
- **Vision tests.** These can determine if a pituitary tumor has impaired your sight.

In addition, your doctor may refer you for more extensive testing with a doctor who specializes in treating disorders of the endocrine system (endocrinologist).

Goals in the treatment of prolactinoma include:

- Return the production of prolactin to normal levels
- Restore normal pituitary gland function
- Reduce the size of the pituitary tumor
- Eliminate any signs or symptoms from tumor pressure, such as headaches or vision problems
- Improve quality of life

## 2. Acromegaly

Acromegaly is a hormonal disorder that develops when your pituitary gland produces too much growth hormone during adulthood. When this happens, your bones increase in size, including those of your hands, feet and face. Acromegaly usually affects middle-aged adults.

Acromegaly usually affects middle-aged adults, though it can develop at any age. In children who are still growing, too much growth hormone can cause a condition called gigantism. These children have exaggerated bone growth and an abnormal increase in height.

Because acromegaly is uncommon and physical changes occur gradually, the condition sometimes takes a long time to recognize. If it's not treated promptly, acromegaly can lead to serious illness and may even become life-threatening. But available treatments can reduce your risk of complications and significantly improve characteristics of the condition, including the enlargement of your features.

**Symptoms**

Acromegaly produces the following signs and symptoms, which can vary from one person to another:

- Enlarged hands and feet
- Coarsened, enlarged facial features
- Coarse, oily, thickened skin
- Excessive sweating and body odor
- Small outgrowths of skin tissue (skin tags)
- Fatigue and muscle weakness
- A deepened, husky voice due to enlarged vocal cords and sinuses
- Severe snoring due to obstruction of the upper airway
- Impaired vision

- Headaches
- Enlarged tongue
- Pain and limited joint mobility
- Menstrual cycle irregularities in women
- Erectile dysfunction in men
- Enlarged organs, such as the heart
- Loss of interest in sex

**Causes**

Acromegaly is caused by the pituitary gland overproducing growth hormone (GH) over time. The pituitary gland, a small gland situated at the base of your brain behind the bridge of your nose, produces a number of hormones. GH plays an important role in managing your physical growth.

When GH is secreted into your bloodstream, it triggers your liver to produce a hormone called insulin-like growth factor-I (IGF-I). In turn, IGF-I stimulates the growth of bones and other tissues.

If your pituitary gland makes too much GH, excessive amounts of IGF-I can result. Too much IGF-I can cause abnormal growth of your soft tissues and skeleton and other signs and symptoms characteristic of acromegaly and gigantism.

**Complications**

Progression of acromegaly can result in major health problems. Complications may include:

- High blood pressure (hypertension)
- Cardiovascular disease, particularly enlargement of the heart (cardiomyopathy)
- Osteoarthritis
- Diabetes mellitus
- Goiter
- Precancerous growths (polyps) on the lining of your colon
- Sleep apnea, a condition in which breathing repeatedly stops and starts during sleep
- Carpal tunnel syndrome
- Spinal cord compression

- Vision loss

Early treatment of acromegaly can prevent these complications from developing or becoming worse. Untreated, acromegaly and its complications can lead to premature death.

**Diagnosis**

Your doctor will ask about your medical history and conduct a physical exam. Then he or she may recommend the following steps:

- GH and IGF-I measurement.
- Growth hormone suppression test.
- Imaging. Treatment

Treatment focuses on lowering your production of GH, as well as reducing the negative effects

Drugs used to lower the production or block the action of GH include:

- Drugs that reduce excess growth hormone secretion (somatostatin analogues).
- Drugs to lower hormone levels (dopamine agonists).
- Drug to block the action of GH (growth hormone antagonist).

## 3. **Cushing syndrome**

Cushing syndrome occurs when your body is exposed to high levels of the hormone cortisol for a long time. Cushing syndrome, sometimes called hypercortisolism, may be caused by the use of oral corticosteroid medication. The condition can also occur when your body makes too much cortisol on its own.

Too much cortisol can produce some of the hallmark signs of Cushing syndrome — a fatty hump between your shoulders, a rounded face, and pink or purple stretch marks on your skin. Cushing syndrome can also result in high blood pressure, bone loss and, on occasion, type 2 diabetes.

Treatments for Cushing syndrome can return your body's cortisol production to normal and noticeably improve your symptoms. The earlier treatment begins, the better your chances for recovery.

**Symptoms**

The signs and symptoms of Cushing syndrome can vary depending on the levels of excess cortisol.

**Common signs and symptoms of Cushing syndrome**

- Weight gain and fatty tissue deposits, particularly around the midsection and upper back, in the face (moon face), and between the shoulders (buffalo hump)
- Pink or purple stretch marks (striae) on the skin of the abdomen, thighs, breasts and arms
- Thinning, fragile skin that bruises easily
- Slow healing of cuts, insect bites and infections
- Acne

**Signs and symptoms women with Cushing syndrome may experience**

- Thicker or more visible body and facial hair (hirsutism)
- Irregular or absent menstrual periods

**Signs and symptoms men with Cushing syndrome may experience**

- Decreased libido
- Decreased fertility
- Erectile dysfunction

**Other signs and symptoms that may occur with Cushing syndrome**

- Severe fatigue
- Muscle weakness
- Depression, anxiety and irritability
- Loss of emotional control
- Cognitive difficulties
- New or worsened high blood pressure
- Headache
- Increased pigmentation of the skin
- Bone loss, leading to fractures over time
- In children, impaired growth

**Causes**

Excess levels of the hormone cortisol are responsible for Cushing syndrome. Cortisol, which is produced in the adrenal glands, plays a variety of roles in your body.

For example, cortisol helps regulate your blood pressure, reduces inflammation, and keeps your heart and blood vessels functioning normally. Cortisol helps your body respond to stress. It also regulates the way you convert (metabolize) proteins, carbohydrates and fats in your diet into usable energy.

**Complications**

Without treatment, complications of Cushing syndrome may include:

- Bone loss (osteoporosis), which can result in unusual bone fractures, such as rib fractures and fractures of the bones in the feet
- High blood pressure (hypertension)
- Type 2 diabetes
- Frequent or unusual infections
- Loss of muscle mass and strength

**Diagnosis**

Cushing syndrome can be difficult to diagnose, particularly endogenous Cushing syndrome, because other conditions share the same signs and symptoms. Diagnosing Cushing syndrome can be a long and extensive process. You may not have any firm answers about your condition until you've had a series of medical appointments. These diagnostic tests may help pinpoint the cause:

- Urine and blood tests.
- Saliva test.
- Imaging tests.
- Petrosal sinus sampling.

**Treatment**

Treatments for Cushing syndrome are designed to lower the high level of cortisol in your body. The best treatment for you depends on the cause of the syndrome.

## 4. Diabetes

Diabetes mellitus, commonly known as diabetes, is a metabolic disease that causes high blood sugar. The hormone insulin moves sugar from the blood into your cells to be stored or used for energy. With diabetes, your body either doesn't make enough insulin or can't effectively use the insulin it does make.

There are a few different types of diabetes:

- Type 1 diabetes is an autoimmune disease. The immune system attacks and destroys cells in the pancreas, where insulin is made. It's unclear what causes this attack. About 10 percent of people with diabetes have this type.
- Type 2 diabetes occurs when your body becomes resistant to insulin, and sugar builds up in your blood.
- Prediabetes occurs when your blood sugar is higher than normal, but it's not high enough for a diagnosis of type 2 diabetes.
- Gestational diabetes is high blood sugar during pregnancy. Insulin-blocking hormones produced by the placenta cause this type of diabetes.

**Symptoms of diabetes**

Diabetes symptoms are caused by rising blood sugar.

**General symptoms**

The general symptoms of diabetes include:

- increased hunger
- increased thirst
- weight loss
- frequent urination
- blurry vision
- extreme fatigue
- sores that don't heal

**Symptoms in men**

In addition to the general symptoms of diabetes, men with diabetes may have a decreased sex drive, erectile dysfunction (ED), and poor muscle strength.

## Symptoms in women

Women with diabetes can also have symptoms such as urinary tract infections, yeast infections, and dry, itchy skin.

## Type 1 diabetes

Symptoms of type 1 diabetes can include:

- extreme hunger
- increased thirst
- unintentional weight loss
- frequent urination
- blurry vision
- tiredness

It may also result in mood changes.

## Type 2 diabetes

Symptoms of type 2 diabetes can include:

- increased hunger
- increased thirst
- increased urination
- blurry vision
- tiredness
- sores that are slow to heal

It may also cause recurring infections. This is because elevated glucose levels make it harder for the body to heal.

## Causes of diabetes

Different causes are associated with each type of diabetes.

## Type 1 diabetes

Doctors don't know exactly what causes type 1 diabetes. For some reason, the immune system mistakenly attacks and destroys insulin-producing beta cells in the pancreas.

Genes may play a role in some people. It's also possible that a virus sets off the immune system attack.

## Type 2 diabetes

Type 2 diabetes stems from a combination of genetics and lifestyle factors. Being overweight or obese increases your risk too. Carrying extra weight, especially in your belly, makes your cells more resistant to the effects of insulin on your blood sugar.

This condition runs in families. Family members share genes that make them more likely to get type 2 diabetes and to be overweight.

## Diabetes complications

High blood sugar damages organs and tissues throughout your body. The higher your blood sugar is and the longer you live with it, the greater your risk for complications.

Complications associated with diabetes include:

- heart disease, heart attack, and stroke
- neuropathy
- nephropathy
- retinopathy and vision loss
- hearing loss
- foot damage such as infections and sores that don't heal
- skin conditions such as bacterial and fungal infections
- depression
- dementia

## Treatment of diabetes

Doctors treat diabetes with a few different medications. Some of these drugs are taken by mouth, while others are available as injections.

**Type 1 diabetes**

Insulin is the main treatment for type 1 diabetes. It replaces the hormone your body isn't able to produce.

There are four types of insulin that are most commonly used. They're differentiated by how quickly they start to work, and how long their effects last:

- Rapid-acting insulin starts to work within 15 minutes and its effects last for 3 to 4 hours.
- Short-acting insulin starts to work within 30 minutes and lasts 6 to 8 hours.
- Intermediate-acting insulin starts to work within 1 to 2 hours and lasts 12 to 18 hours.
- Long-acting insulin starts to work a few hours after injection and lasts 24 hours or longer.

**Type 2 diabetes**

Diet and exercise can help some people manage type 2 diabetes. If lifestyle changes aren't enough to lower your blood sugar, you'll need to take medication.

**Diabetes diagnosis**

Anyone who has symptoms of diabetes or is at risk for the disease should be tested. Women are routinely tested for gestational diabetes during their second or third trimesters of pregnancy.

Doctors use these blood tests to diagnose Prediabetes and diabetes:

- The fasting plasma glucose (FPG) test measures your blood sugar after you've fasted for 8 hours.
- The A1C test provides a snapshot of your blood sugar levels over the previous 3 months.

To diagnose gestational diabetes, your doctor will test your blood sugar levels between the 24th and 28th weeks of your pregnancy.

- During the glucose challenge test, your blood sugar is checked an hour after you drink a sugary liquid.

- During the 3 hour glucose tolerance test, your blood sugar is checked after you fast overnight and then drinks a sugary liquid.

The earlier you get diagnosed with diabetes, the sooner you can start treatment. Find out whether you should get tested, and get more information on tests your doctor might perform.

## 5. Addison's disease

Addison's disease, also called adrenal insufficiency, is an uncommon disorder that occurs when your body doesn't produce enough of certain hormones. In Addison's disease, your adrenal glands, located just above your kidneys, produce too little cortisol and, often, too little aldosterone.

Addison's disease occurs in all age groups and both sexes, and can be life-threatening. Treatment involves taking hormones to replace those that are missing.

**Symptoms**

Addison's disease symptoms usually develop slowly, often over several months. Often, the disease progresses so slowly that symptoms are ignored until a stress, such as illness or injury, occurs and makes symptoms worse. Signs and symptoms may include:

- Extreme fatigue
- Weight loss and decreased appetite
- Darkening of your skin (hyperpigmentation)
- Low blood pressure, even fainting
- Salt craving
- Low blood sugar (hypoglycemia)
- Nausea, diarrhea or vomiting (gastrointestinal symptoms)
- Abdominal pain
- Muscle or joint pains
- Irritability
- Depression or other behavioral symptoms
- Body hair loss or sexual dysfunction in women

**Causes**

Addison's disease is caused by damage to your adrenal glands, resulting in not enough of the hormone cortisol and, often, not enough aldosterone as well. Your adrenal glands are part of your endocrine system. They produce hormones that give instructions to virtually every organ and tissue in your body.

**Complications**

If you have untreated Addison's disease, you may develop an addisonian crisis as a result of physical stress, such as an injury, infection or illness. Normally, the adrenal glands produce two to three times the usual amount of cortisol in response to physical stress. With adrenal insufficiency, the inability to increase cortisol production with stress can lead to an addisonian crisis.

An addisonian crisis is a life-threatening situation that results in low blood pressure, low blood levels of sugar and high blood levels of potassium. You will need immediate medical care.

People with Addison's disease commonly have associated autoimmune diseases.

**Diagnosis**

Your doctor will talk to you first about your medical history and your signs and symptoms. You may undergo some of the following tests:

- **Blood test.**
- **ACTH stimulation test.**
- **Insulin-induced hypoglycemia test.**
- **Imaging tests.**

**Treatment**

All treatment for Addison's disease involves medication. You will be given hormone replacement therapy to correct the levels of steroid hormones your body isn't producing. Some options for treatment include oral corticosteroids such as:

- **Hydrocortisone, prednisone or methylprednisolone** to replace cortisol. These hormones are given on a schedule to mimic the normal 24-hour fluctuation of cortisol levels.
- **Fludrocortisone acetate** to replace aldosterone.

## 6. Ovarian Disorders

The ovaries are a pair of organs that women have. They are located in the pelvis, one on each side of the uterus. Each ovary is about the size and shape of an almond.
The ovaries produce a woman's eggs. If an egg is fertilized by a sperm, a pregnancy can result. Ovaries also make the female hormones estrogen and progesterone. When a woman goes through menopause, her ovaries stop releasing eggs and make far lower levels of hormones. Problems with the ovaries include

- Ovarian cancer
- Ovarian cysts and polycystic ovary syndrome
- Premature ovarian failure
- Ovarian torsion, a twisting of the ovary

**Diagnosis and Tests**

- Estrogen Test American Association for Clinical Chemistry
- FSH (Follicle-Stimulating Hormone) Test American Association for Clinical Chemistry
- How Do Health Care Providers Diagnose Primary Ovarian Insufficiency (POI)? National Institute of Child Health and Human Development
- Ultrasound — Pelvis Array

# 7. Testicular Disorders

The testicles produce the male reproductive cells and male hormones, including testosterone. Disorders of the testes can lead to serious complications, including hormonal imbalances, sexual dysfunction, and infertility.

**What are testicles?**

The testicles (also called testes) are part of the male reproductive system. The testicles are two oval organs about the size of large olives. They are located inside the scrotum, the loose sac of skin that hangs behind the penis. The testicles make the male hormones, including testosterone, and produce sperm, the male reproductive cells. Disorders of the testes can lead to serious complications, including hormonal imbalances, sexual dysfunction and infertility.

**What disorders affect the testes?**

Some of the more common disorders that affect the testes include the following:

**Testicular trauma**

Because the testes are located within the scrotum, which hangs outside of the body, they do not have the protection of muscles and bones. This makes it easier for the testes to be struck, hit, kicked or crushed, which occurs most often during contact sports. Males can protect their testicles by wearing athletic cups during sports.

Trauma to the testes can cause severe pain, bruising and/or swelling. In most cases, the testes—which are made of a spongy material—can absorb the shock of an injury without serious damage. A rare type of testicular trauma, called testicular rupture, occurs when the testicle receives a direct blow or is squeezed against the hard surface of the pelvis. This injury can cause blood to leak into the scrotum. In severe cases, surgery to repair the rupture—and thus save the testicle—may be necessary.

**Testicular torsion**

Within the scrotum, the testicles are secured at one end by a structure called the spermatic cord. Sometimes, this cord gets twisted cutting off the testicle's blood supply. Symptoms of testicular torsion include sudden and severe pain, enlargement of the affected testicle, tenderness, and swelling.

This disorder, which occurs most often in young males between the ages of 12 and 18, can result from an injury to the testicles or from strenuous activity. It also can occur for no apparent reason.

Testicular torsion is an emergency. Treatment usually involves correction of the problem through surgery. Testicular function may be saved if the condition is diagnosed and corrected immediately. If the blood supply to the testicle is cut off for a long period of time, the testicle can become permanently damaged and may need to be removed.

**Testicular cancer**

Testicular cancer occurs when abnormal cells in the testicles divide and grow uncontrolled. Testicular cancer can develop in one or both testicles in men or young boys. Symptoms of testicular cancer include a lump, irregularity or enlargement in either testicle; a pulling sensation or feeling of unusual heaviness in the scrotum; a dull ache in the groin or lower abdomen; and pain or discomfort (which may come and go) in a testicle or the scrotum.

The exact causes of testicular cancer are not known, but there are certain risk factors for the disease. A risk factor is anything that increases a person's chance of getting a disease. The risk factors for cancer of the testicles include:

- **Age —** Testicular cancer can occur at any age, but most often occurs in men between the ages of 15 and 40.

- **Undescended testicle (cryptorchidism) —** This is a condition in which the testicles do not descend from the abdomen, where they are located during development, to the scrotum shortly before birth. This condition is a major risk factor for testicular cancer.
- **Family history —** A family history of testicular cancer increases the risk.
- **Race and ethnicity —** The risk for testicular cancer in Caucasian men is more than five times that of African-American men and more than double that of Asian-American men.

The success of treatment for testicular cancer depends on the stage of the disease when it is first detected and treated. If the cancer is found and treated before it spreads to the lymph nodes, the cure rate is excellent, greater than 98 percent. Even after testicular cancer has spread to the lymph nodes and other parts of the body, chemotherapy is highly effective, with a cure rate greater than 90 percent.

To prevent testicular cancer, all men should be familiar with the size and feel of their testicles, so they can detect any changes. The American Cancer Society recommends monthly testicular self-examinations (TSE) for men over age 15. A TSE is best performed after a warm bath or shower, when the skin of the scrotum is relaxed. After looking for any changes in appearance, carefully examine each testicle by rolling it between the fingers and thumbs of both hands to check for any lumps.

**Epididymitis**

Epididymitis is inflammation of the epididymis. The epididymis is the coiled tube that lies on and behind each testicle. It functions in the transport, storage and maturation of sperm cells that are produced in the testicles. The epididymis connects the testicles with the vas deferens (the tubes that carry sperm).

Epididymitis often is caused by infection or by the sexually transmitted disease chlamydia. Symptoms of epididymitis include scrotal pain and swelling. In severe cases, the infection can spread to the adjacent testicle, causing fever and abscess (collection of pus).

Treatment for epididymitis includes antibiotics (drugs that kill the bacteria causing the infection), bed rest, ice to reduce swelling, the use of a scrotal supporter, and anti-inflammatory medicines (such as ibuprofen). The use of condoms during sex can help prevent epididymitis caused by chlamydia. If left untreated, epididymitis can produce scar tissue, which can block the sperm from leaving the testicle. This can cause problems with fertility, especially if both testicles are involved or if the man has recurring infections.

**Hypogonadism**

One function of the testes is to secrete the hormone testosterone. This hormone plays an important role in the development and maintenance of many male physical characteristics. These include muscle mass and strength, fat distribution, bone mass, sperm production, and sex drive.

Hypogonadism in men is a disorder that occurs when the testicles (gonads) do not produce enough testosterone. Primary hypogonadism occurs when there is a problem or abnormality in the testicles themselves. Secondary hypogonadism occurs when there is a problem with the pituitary gland in the brain, which sends chemical messages to the testicles to produce testosterone.

Hypogonadism can occur during fetal development, at puberty, or in adult men. When it occurs in adult men, hypogonadism may cause the following problems:

- Erectile dysfunction (the inability to achieve or maintain an erection)
- Infertility
- Decreased sex drive
- Decrease in beard and growth of body hair
- Decrease in size or firmness of the testicles
- Decrease in muscle mass and increase in body fat
- Enlarged male breast tissue
- Mental and emotional symptoms similar to those of menopause in women (hot flashes, mood swings, irritability, depression, fatigue)

Treatment for hypogonadism depends on the cause. Male hormone replacement (testosterone replacement therapy or TRT) often is used to treat disorders of the testicles. If the problem is related to the pituitary gland, pituitary hormones may help increase testosterone levels and sperm production.