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## Cushing syndrome

Cushing syndrome is a disorder that occurs when your body has a high level of the hormone cortisol.

### Causes

The most common cause of Cushing syndrome is taking too much glucocorticoid or corticosteroid medicine. This form of Cushing syndrome is called exogenous Cushing syndrome. Prednisone, dexamethasone, and prednisolone are examples of this type of medicine. Glucocorticoids mimic the action of the body's natural hormone cortisol. These drugs are used to treat many conditions such as asthma, skin inflammation, cancer, bowel disease, joint pain, and rheumatoid arthritis.

Other people develop Cushing syndrome because their body produces too much cortisol. This hormone is made in the adrenal glands. Causes of too much cortisol are:

- Cushing disease, which occurs when the pituitary gland makes too much of the hormone adrenocorticotrophic hormone (ACTH). ACTH then signals the adrenal glands to produce too much cortisol. A pituitary gland tumor can cause this condition.
- Tumor of the adrenal gland
- Tumor elsewhere in the body that produces corticotropin-releasing hormone (CRH)
- Tumor elsewhere in the body that produces ACTH (ectopic Cushing syndrome)

### Symptoms

Not everyone with Cushing syndrome has the same symptoms. Some people have many symptoms while others have hardly any symptoms. Symptoms usually get worse over time.

Most people with Cushing syndrome have:

- Round, red, full face (moon face)
- Slow growth rate (in children)
- Weight gain with fat accumulation on the trunk, but fat loss from the arms, legs, and buttocks (central obesity)

Skin changes can include:

- Skin infections

- Purple stretch marks (1/2 inch or 1 centimeter or more wide) called striae on the skin of the abdomen, upper arms, thighs, and breasts
- Thin skin with easy bruising (especially on the arms and hands)

Muscle and bone changes include:

- Backache, which occurs with routine activities
- Bone pain or tenderness
- Collection of fat between the shoulders and above collar bones
- Rib and spine fractures caused by thinning of the bones
- Weak muscles, especially of the hips and shoulders

Body-wide (systemic) changes include:

- Type 2 diabetes mellitus
- High blood pressure (hypertension)
- Increased cholesterol and triglycerides (hyperlipidemia)

Women with Cushing syndrome may have:

- Excess hair growth on the face, neck, chest, abdomen, and thighs
- Periods that become irregular or stop

Men may have:

- Decreased or no desire for sex (low libido)
- Erection problems

Other symptoms that may occur with this disease:

- Mental changes, such as depression, anxiety, or changes in behavior
- Fatigue
- Headache
- Increased thirst and urination

## Exams and Tests

Your health care provider will perform a physical exam and ask about your symptoms and the medicines you are taking. Tell your provider about all medicines you have been taking for the past several months. Also, tell your provider about shots that you received at a provider's office.

Laboratory tests that may be done to diagnose Cushing syndrome and identify the cause are:

- Blood cortisol level
- Blood sugar
- Saliva cortisol level

- Dexamethasone suppression test
- 24-hour urine for cortisol and creatinine
- ACTH level
- ACTH stimulation test (in rare cases)

Tests to determine the cause or complications may include:

- Abdominal CT
- Pituitary MRI
- Bone mineral density

Making the diagnosis of Cushing syndrome may be complicated. Usually, you will be asked to see a hormone specialist (endocrinologist).

## **Treatment**

Treatment depends on the cause.

Cushing syndrome caused by corticosteroid use:

- Your provider will instruct you to slowly decrease the medicine dosage. Stopping the medicine suddenly can be dangerous.
- If you cannot stop taking the medicine because of the disease it is treating, your high blood sugar, high cholesterol levels, and bone thinning or osteoporosis should be closely monitored and treated.

With Cushing syndrome caused by a pituitary tumor that releases too much ACTH (Cushing disease), you may need:

- Surgery to remove the tumor
- Radiation after removal of the pituitary tumor (in some cases)
- Cortisol replacement therapy after surgery
- Medicines to replace pituitary hormones that become deficient
- Medicines to prevent the body from making too much cortisol

With Cushing syndrome due to a pituitary tumor, adrenal tumor, or other tumors:

- You may need surgery to remove the tumor.
- If the tumor cannot be removed, you may need medicines to help block the release of cortisol or the ability of cortisol to signal.

## **Outlook (Prognosis)**

Removing the tumor may lead to full recovery, but there is a chance that the condition will return.

Survival for people with Cushing syndrome caused by tumors depends on the tumor type.

Untreated, Cushing syndrome can be life threatening.

# Possible Complications

Health problems that may result from Cushing syndrome include any of the following:

- Diabetes
- Enlargement of pituitary tumor
- Bone fractures due to osteoporosis
- High blood pressure
- Kidney stones
- Serious infections

## When to Contact a Medical Professional

Contact your provider if you have symptoms of Cushing syndrome.

## Prevention

If you take a corticosteroid, know the signs and symptoms of Cushing syndrome. Getting treated early can help prevent any long-term effects of Cushing syndrome. If you use inhaled steroids, you can decrease your exposure to the steroids by using a spacer and by rinsing your mouth after breathing in the steroids.

## Alternative Names

Hypercortisolism; Cortisol excess; Glucocorticoid excess - Cushing syndrome; Cushing's syndrome

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