Hyperglycemia in diabetes

Overview

High blood sugar, also called hyperglycemia, affects people who have diabetes. Several factors can play a role in hyperglycemia in people with diabetes. They include food and physical activity, illness, and medications not related to diabetes. Skipping doses or not taking enough insulin or other medication to lower blood sugar also can lead to hyperglycemia.

It's important to treat hyperglycemia. If it's not treated, hyperglycemia can become severe and cause serious health problems that require emergency care, including a diabetic coma. Hyperglycemia that lasts, even if it's not severe, can lead to health problems that affect the eyes, kidneys, nerves and heart.

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Symptoms

Hyperglycemia usually doesn't cause symptoms until blood sugar (glucose) levels are high — above 180 to 200 milligrams per deciliter (mg/dL), or 10 to 11.1 millimoles per liter (mmol/L).

Symptoms of hyperglycemia develop slowly over several days or weeks. The longer blood sugar levels stay high, the more serious symptoms may become. But some people who've had type 2 diabetes for a long time may not show any symptoms despite high blood sugar levels.

Early signs and symptoms

Recognizing early symptoms of hyperglycemia can help identify and treat it right away. Watch for:

- Frequent urination
- Increased thirst
- Blurred vision
- Feeling weak or unusually tired

Later signs and symptoms

If hyperglycemia isn't treated, it can cause toxic acids, called ketones, to build up in the blood and urine. This condition is called ketoacidosis. Symptoms include:

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- Abdominal pain
- Nausea and vomiting
- Shortness of breath
- Confusion
- Loss of consciousness

When to see a doctor

Seek immediate help from your care provider or call 911 if:

- You have ongoing diarrhea or vomiting, and you can't keep any food or fluids down
- Your blood glucose levels stay above 240 milligrams per deciliter (mg/dL) (13.3 millimoles per liter (mmol/L)) and you have symptoms of ketones in your urine

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Causes

During digestion, the body breaks down carbohydrates from foods — such as bread, rice and pasta — into sugar molecules. One of the sugar molecules is called glucose. It's one of the body's main energy sources. Glucose is absorbed and goes directly into your bloodstream after you eat, but it can't enter the cells of most of the body's tissues without the help of insulin. Insulin is a hormone made by the pancreas.

When the glucose level in the blood rises, the pancreas releases insulin. The insulin unlocks the cells so that glucose can enter. This provides the fuel the cells need to work properly. Extra glucose is stored in the liver and muscles.

This process lowers the amount of glucose in the bloodstream and prevents it from reaching dangerously high levels. As the blood sugar level returns to normal, so does the amount of insulin the pancreas makes.

Diabetes drastically reduces insulin's effects on the body. This may be because your pancreas is unable to produce insulin, as in type 1 diabetes. Or it may be because your body is resistant to the effects of insulin, or it doesn't make enough insulin to keep a normal glucose level, as in type 2 diabetes.

In people who have diabetes, glucose tends to build up in the bloodstream. This condition is called hyperglycemia. It may reach dangerously high levels if it is not treated properly. Insulin and other drugs are used to lower blood sugar levels.

Risk factors

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- Not injecting insulin properly or using expired insulin
- Not following your diabetes eating plan
- Being inactive
- Having an illness or infection
- Using certain medications, such as steroids or immunosuppressants
- Being injured or having surgery
- Experiencing emotional stress, such as family problems or workplace issues

Illness or stress can trigger hyperglycemia. That's because hormones your body makes to fight illness or stress can also cause blood sugar to rise. You may need to take extra diabetes medication to keep blood glucose in your target range during illness or stress.

Complications

Long-term complications

Keeping blood sugar in a healthy range can help prevent many diabetes-related complications. Long-term complications of hyperglycemia that isn't treated include:

- Cardiovascular disease
- Nerve damage (neuropathy)
- Kidney damage (diabetic nephropathy) or kidney failure
- Damage to the blood vessels of the retina (diabetic retinopathy) that could lead to blindness
- Feet problems caused by damaged nerves or poor blood flow that can

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