

Type 1 diabetes

Overview

Diabetes is the name given to a group of conditions that leave the body unable to maintain normal levels of blood glucose (also called blood sugar).

There are two types of diabetes: Type 1 diabetes (previously referred to as insulin dependent diabetes or juvenile diabetes) and type 2 diabetes.

Common symptoms of type 1 diabetes are increased thirst and hunger, weight loss, extreme fatigue and increased urination.

The symptoms are a result of the body not being able to utilise blood sugar — the main source of energy for the cells — in the usual way because it doesn't have enough insulin to break it down and move it into the cells to burn for energy.

Type 1 diabetes is far less common than type 2 and affects 10-15% of all people with diabetes. Most people with type 1 diabetes are diagnosed before the age of 40 and most often in childhood between 8 and 12 years.

Unlike type 2, type 1 diabetes is not associated with being overweight or lack of exercise. In fact, type 1 diabetes is caused by the body's own immune system attacking the insulin-producing cells of the pancreas.

It is not known what causes the immune system to behave in this way, but it usually occurs in people who are genetically susceptible to developing the disease.

Insulin is the only treatment for type 1 diabetes and it must be taken for life.

Type 1 diabetes affects over 122,300 people in Australia and 1825 Australians are diagnosed every year. Type 1 diabetes is one of the most common chronic (long-lasting) diseases in children and is on the increase.

Causes

Glucose is the main source of fuel for the body. Blood glucose levels are controlled by a hormone called insulin, which is produced in the pancreas. Insulin allows cells in the body to take up glucose to fuel their metabolism.

In people with type 1 diabetes, the body's immune system reacts against and destroys the insulin-producing cells. This is known as an 'autoimmune' disease because the body's own immune system attacks the cells.

Main causes

There are thought to be two main causes of type 1 diabetes:

- ▶ **Genetic:** If you have a close family member with type 1 diabetes, you are more likely to develop the disease as you share some of the same genes.
- ▶ **Environmental:** It is believed that an environmental factor, such as a virus, kick-starts the body into attacking its own insulin-producing cells.

Symptoms

Common symptoms for type 1 diabetes are:

- ▶ **Increased thirst** due to your body responding to increased levels of blood glucose.
- ▶ **Increased urination** due to the increase in glucose level in the blood and urine.
- ▶ **Increased hunger** because the body cannot utilise glucose, so it triggers your appetite to eat more food.
- ▶ **Weight loss**, even though you may be eating more. Normally your body uses glucose as its source of energy. Weight loss occurs because the body has to resort to using other sources of energy such as muscle and stored fat.
- ▶ **Fatigue.** The lack of glucose being absorbed by cells means you have little energy to burn and you feel tired and lethargic.

The blood sugar level rises because the body is not able to use it for energy. As a result, sugar builds up in the blood. Once the levels rise above the normal range, the symptoms detailed above start to occur.

As this process continues, the body turns to stored fat and protein for energy. One way the body reacts to breaking down fats is by producing ketones (a type of acid). Ketones in the blood can lead to nausea, abdominal pain and vomiting. If blood sugar and ketones rise unchecked the person can become very unwell with abdominal pain, vomiting and reduced conscious state. This severe illness is called diabetic ketoacidosis.

Diagnosis

If your doctor suspects you have type 1 diabetes, you will be sent to have a blood glucose test.

If the level is greater than 7mmol/L before you eat or higher than 11mmol/L after a meal and you have some of the symptoms outlined above, diabetes is diagnosed.

Treatment options

Once you are diagnosed with diabetes, your doctor will conduct a more thorough examination and will arrange for you to start insulin. This is because your body cannot produce enough insulin by itself.

Insulin injections are a treatment for diabetes, not a cure, so you will have to inject insulin for life. You will learn to inject insulin either with an insulin syringe or an insulin pen, or in some cases you may use an insulin pump. The amount of insulin you inject must be matched to your diet and the amount of activity you undertake every day. To determine the amount of insulin injected you must learn to monitor your blood glucose.

Blood glucose monitoring is done by pricking your finger and squeezing out a small drop of blood onto a test stick, which is read by a small machine. In the long term it is important to try to regulate the blood sugar

levels as close to normal as possible (between 4-6mmol/L)

Your doctor and a diabetes educator will work closely with you to help manage the new regimen and in Australia there are excellent support services available for people diagnosed with type 1 diabetes.

Lifestyle and diet

The main aim of treatment for any form of diabetes is to maintain your blood sugar as close to normal as possible. As well as injecting insulin, there are a combination of lifestyle changes you can make to ensure you stay healthy.

Some changes may include:

- ▶ A low-fat diet with plenty of high-fibre complex carbohydrates (wholegrain breads, cereals, dried beans, lentils, fruits and vegetables).
- ▶ Moderate exercise lowers your blood sugar, improves insulin sensitivity and will help with weight loss if that is a factor.
- ▶ Exercise also helps lower high blood pressure.
- ▶ Making time to understand and deal with the emotional aspects of adjusting to a life-long condition is also important.
- ▶ For teenagers, who may ask 'Why am I different', counselling is an essential aid in adapting to a chronic illness.

Long-term checks

In the long term, you will have regular blood checks for cholesterol, thyroid function and average blood sugar called HbA1c, plus checks of urine (to assess kidney function).

The HbA1c test measures the amount of sugar attached to the red blood cells in your circulation and provides a reading of your average blood sugar level for the past 2-3 months. The target is to get this test to 7% or less.

You will also be sent to an ophthalmologist (an eye specialist) or optician to check the back of your eyes and you will have a regular foot check by your doctor or a podiatrist (foot specialist).

Online support

For additional support and resources visit:
 Diabetes Australia:
www.diabetesaustralia.com.au
 Juvenile Diabetes Research Foundation:
www.jdrf.org.au/

ItsMyHealth.com.au