

FUNDAMENTALS OF METABOLISM IN THE BODY, ANALYSIS OF SOME SUBSTANCES INVOLVED IN IT

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Dyslipidemia: a risk to blood lipids and their health

Disorders of fat metabolism are among the most common metabolic diseases associated with diabetes, and they occur together. Such dyslipidemias may be accompanied by an increase or decrease in the lipid value of the blood and are called hyper- or hypolipidemia. Both diseases often go unnoticed, but high blood lipid levels are a risk factor for cardiovascular disease. Therefore, this option poses a great health risk to the victims. Simple lifestyle changes with early diagnosis can often help prevent serious consequences.

Determination

Disorders of fat metabolism indicate changes in the composition of one or more lipoproteins in the plasma called blood lipids. When the lipid level in the blood is high, these diseases are generalized in the terms dyslipoproteinemia (dyslipidemia) or more precisely hyperlipoproteinemia (hyperlipidemia). However, at low concentrations, hypolipoproteinemia (hypolipidemia) is discussed.

What are blood lipids?

Because fats (lipids) are insoluble in water, an appropriate transport mechanism is required in aqueous blood. It consists of special compounds that are fats inside and water-soluble proteins in the outside. They make lipoproteins called blood lipids.

The two main levels of lipids are blood cholesterol and triglycerides. They are an important “fatty” component of lipoproteins, which provide information about the state of fat metabolism. Cholesterol is a fat-like substance that is mainly produced in the body (liver and intestines). It is also available through food. It is an important building material for cell walls and other substances in the body. Triglycerides are fatty substances that are stored in the adipose tissue as an energy reserve when they are present in excess of what is needed at a given time. They can also be formed by the body itself to store energy.

Depending on their composition and function, lipoproteins are distinguished between the following five major groups.

Chylomicrons,

Very low density lipoprotein (VLDL),

Low density lipoproteins (LDL),

High Density Lipoproteins (HDL),

Lipoprotein (a).

While LDL basically transports self-produced cholesterol from the liver to certain body cells, HDL is responsible for transporting unused cholesterol to the liver, where it is broken down again. Excessive levels of LDL in the blood lead to accumulation in the vessel wall (arteriosclerosis) and are therefore considered harmful to health, while high levels of HDL provide some protection against vascular calcification. Triglycerides are mainly transported by VLDL and chylomicrons.

Hyperlipidemia: high levels of lipids in the blood

The majority of fat metabolism disorders are associated with excessive concentrations of lipoproteins and inconvenient displacement of the corresponding lipoproteins relative to each other. These common hyperlipidemias pose a major health risk because they lead to arteriosclerosis and thus contribute to the development of cardiovascular disease.

Basically, the primary and secondary forms of this disease differ in their causes. Primary hyperlipidemias are hereditary, while secondary forms are the result of other underlying diseases or often due to a healthy lifestyle.

The most common lipid disorders in this context can be divided into the following three groups.

Hypercholesterolemia (very high cholesterol),

Hypertriglyceridemia (excess triglycerides),

Concomitant hyperlipidemia (high levels of triglycerides and cholesterol).

Hypolipidemia: low blood lipid levels

In contrast to the increase in the amount of lipids in the blood, the lower values are lower and they have a much lower rate of disease. But when the level of blood lipids is very low, the difference between primary (congenital) and secondary (acquired) diseases there is.

Symptoms

Often, disorders of fat metabolism do not cause symptoms directly. Conversely, complaints and complications occur only at a later stage, and if the imbalance persists for a long time.

Complaints and consequences if the level of lipids in the blood is too high

Especially in the case of hypercholesterolemia, a direct link between elevated LDL cholesterol values and the development of arteriosclerosis is scientifically proven. The effect relationship is further complicated by an increase in triglyceride concentration. Deposition in the vessel wall, especially cholesterol, leads to narrowing of the arteries and arteriosclerotic changes in the vessel walls. They are less flexible and less flexible. The consequences of this can be circulatory disorders that occur anywhere in the body and in turn lead to serious complications, for example:

Angina pectoris (chest pressure) with chest pain that can spread to the left arm

Coronary artery disease (CHD) and heart attack,

Stroke.

If the blood vessels in the extremities are narrowed, sleep, tingling, walking with ants, and cramp-like complaints in the legs for long periods of time may occur (store window disease). Complete vascular occlusion is also possible here.

Also, fats can accumulate in other tissues and cause more damage to health. This includes the development of painful fatty liver in the upper abdomen or xanthoma. The latter usually manifests itself in the form of yellowish-brown thickened skin, such as on the hands, elbows, Achilles tendons, or even on the eyelids (xanthelasmas). In addition, there may be deposits in the cornea that form a visible opaque ring (arcus lipoides corneae).

Symptoms and consequences of low blood lipid levels

Low fat intake rarely causes health problems. If some underlying disease is responsible for the low concentration of fats, this can lead to suspicious (serious) complaints. Rare hereditary hypolipidemia can lead to impaired growth and development. Sometimes oily stools appear and can affect various organs.

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