Silent Signs of Inflammation That May Lead to a Heart Attack, Stroke, or Dementia

What Is Inflammation? Inflammation is a way by which your body’s white blood cells and thechemicals they make protect you from infection from outside invaders, such as bacteria and viruses. Short-term inflammation is good as it protects you from the invaders, but LONG-TERM LOW-GRADE inflammation is NOT good for your body!

The Three Markers of Inflammation

Homocysteine: High levels of homocysteine □□can lead to cardiovascular disease, dementia, and pregnancy complications.

What is homocysteine

Amino acids are the molecules that make up proteins. There are about 500 different amino acids in the world, but only 22 are used to build all the proteins necessary for various organisms. Such amino acids are called proteinogenic. All other amino acids are formed as intermediate products of various reactions.

Homocysteine is an intermediate in the metabolism of the proteinogenic amino acids methionine and cysteine. It does not enter the body with food but is formed from methionine during the reactions necessary for the normal functioning of our body. The resulting homocysteine can either be converted back to methionine or to another important amino acid, cysteine. These reactions occur due to enzymes, for adequate work of which vitamins B6, B12, and folic acid are necessary.

Thus, methionine, homocysteine, cysteine, some enzymes, as well as vitamins B6, B12, and folate (Vitamin B9) are participants in one process. Changes in the work of these components can lead to an increase in homocysteine.

Why is this happening?

- Impaired work of enzymes. Homocysteine □□levels rise because enzymes cannot convert them to other amino acids. Such violations are rare but can lead to serious complications. For example, a defect in the enzyme cystathionine beta-synthase leads to changes in the lens, problems with intelligence, and early development of atherosclerosis.
- Lack of vitamins. If the body does not have enough vitamins B6, B9, and B12, then even enzymes with normal activity will not be able to work correctly. Vitamin deficiencies can be caused by problems with bowel function, alcoholism, liver disease, and insufficient intake of vitamins from food.
- Impaired kidney function. The exact mechanism is unknown, but it may be due to impaired homocysteine □ excretion

hs-CRP:

C-reactive protein (CRP) is the most sensitive and fastest indicator of inflammation or tissue damage in the body. CRP is produced primarily in the liver. Its main function is to activate immune reactions and neutralize microorganisms and decay products of damaged tissues.

CRP is involved in the recognition and removal of foreign pathogens, as well as damaged cells. This is necessary for the timely “cleansing” of the body at the cellular level in conditions of an active inflammatory process. With the development of inflammation – both infectious and non-infectious nature – in oncological diseases, myocardial

infarction, and other cardiovascular diseases, the level, as well as conditions accompanied by tissue damage, the level of CRP in the blood increases. By increasing its concentration in conjunction with other indicators, one can judge not only the presence but also the severity of inflammation, and its dynamics. Acute bacterial infections cause a significant increase in CRP in the blood, while viral infections cause a moderate increase. Evaluation of the level of CRP, thus, can indirectly indicate the cause of the inflammatory process.

A relatively elevated level of CRP, even with normal cholesterol levels in apparently healthy individuals, can predict the risk of hypertension, myocardial infarction, stroke, sudden cardiac death, type 2 diabetes mellitus, and obliterating atherosclerosis of peripheral vessels. In patients with coronary heart disease, excessive content of CRP is a bad sign and indicates a high risk of recurrent heart attack, stroke, restenosis during angioplasty, and complications after coronary artery bypass grafting. Also, at present, the determination of the level of CRP is recommended in order to identify complications in the new coronavirus infection COVID-19.

Ferritin:

It is important to know that ferritin is included in the group of so-called “acute phase proteins of inflammation”, along with C-reactive protein, fibrinogen, ceruloplasmin and other proteins, it is actively synthesized by liver cells, lymphocytes, monocytes, neutrophils during inflammation, viral and bacterial infections, toxic , autoimmune damage and malignancy.

What should be the content of ferritin in the body?

The normal level of ferritin is 15-200 mcg/l and depends on age, sex and body weight. It is believed that the minimum level of ferritin is approximately equal to the weight of a person, and the most optimal individual level of ferritin =

weight + 70 (mcg / l).

What increase in ferritin is considered significant?

An increase in ferritin levels of more than 300 µg / l in men, as well as in women in menopause and more than 200 µg / l in women of childbearing age.

What are the reasons for the increase in ferritin?

1. Inflammatory process (bacterial, viral, including coronavirus) in the respiratory system; infectious inflammation in the urinary system, abdominal organs; autoimmune inflammation;
2. Excessive intake of iron in the body (use of iron preparations and dietary supplements containing it, intravenous administration of iron preparations, blood transfusions)
3. Chronic liver diseases (hereditary hemochromatosis, viral hepatitis B and C, non-alcoholic fatty liver disease – liver steatosis and steatohepatitis); alcoholic liver disease;
4. Oncopathology (lymphomas, lymphogranulomatosis, cancer of the breast, prostate, intestines, liver, etc.);
5. Massive necrosis (damage) of organs and tissues;
6. Hemolytic anemia (hereditary and acquired);
7. Other reasons for which a slight increase in ferritin is possible: taking hormonal contraceptives, after heavy physical exertion, with increased thyroid function with alcohol abuse.

To exclude iron overload syndrome, in addition to ferritin, it is additionally necessary to perform a clinical blood test, determine the level of serum iron, transferrin, the total iron-binding capacity of the blood, a saturation of transferrin with iron, assess liver enzymes, markers of the inflammatory process.

If the increase in ferritin is not associated with iron

overload but is caused by an inflammatory process or other causes, then treatment is aimed at correcting the underlying disease.

Should you need more help with managing the symptoms and finding out the root cause of your health issues, schedule a consultation with Zhanna Tarjeft, FNP Here.

BOOK AN APPOINTMENT

Zhanna Tarjeft, FNP-BC is a Functional Medicine Family Nurse Practitioner specializing in gut health issues such as SIFO (Small Intestinal Fungal Overgrowth), SIBO (Small Intestinal Bacterial Overgrowth), leaky gut, IBS, Mold illness (CIRS, Biotoxin illness) and in thyroid disorders such as hypothyroid and autoimmune thyroiditis (Hashimoto's autoimmune thyroiditis). For more information on how to become a patient, please contact our office.