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Chemotherapy and the Liver

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Abstract
There are insufficient data on the effect of chemotherapy on liver function. Our research focused on the negative effects of chemotherapy on liver functions and their prevention, and we summarized the results of our research.

Keywords: liver, chemotherapy, Hepatosan.

Introduction

Chemotherapy itself also varies depending on the goal. The main mechanism of action of chemotherapy drugs is their effect on the mechanism of cell division. Cancer cells divide very quickly, therefore, by influencing cell division, we stop tumor growth. Chemotherapy is a treatment. And, like any treatment, it has side effects. They come from any medication, they come after surgery. Preoperative chemotherapy is given before surgery to minimize the size of the tumor and make the surgery as gentle as possible. And sometimes chemotherapy is **palliative and postoperative .** Polliamine is used when the tumor is advanced, with multiple metastases, and it is impossible to cure the patient, but it is possible to slow down further progression and try to control the tumor. In this case, chemotherapy is designed to give the patient time, but, as a rule, it accompanies him to the end. And then it may seem that the patient died not from cancer, but from "chemistry", although this is not so. But, in addition to the tumor, there are many other rapidly dividing cells in the body. They are in all systems that are actively updated - in the blood, in the mucous membranes. Those chemotherapy drugs that do not act selectively act on these cells. After chemotherapy, the patient's blood counts are expected to drop. Usually the peak of the fall falls on the seventh or fourteenth day, because the “chemistry” just acted on all the cells that were in the peripheral blood, and the bone marrow had not yet had time to develop new ones . The fall occurs depending on the drug that was used; some of them act mainly on platelets, others - on leukocytes and neutrophils, others - on erythrocytes and hemoglobin.

Chemotherapy treatment takes place in cycles. Depending on the chemotherapy regimen, a person may receive, for example, three days of chemotherapy drips, with the next 21 days later. This interval is called "one cycle", it is given specifically so that the patient's body recovers.

Before each new session of chemotherapy, the patient's condition is monitored, they look at what happened to him during this period - they do a clinical and biochemical blood test. Until a person has recovered, a new cycle of treatment does not begin.

If, apart from a decrease in blood counts to a certain level, nothing bad happened in the interval between “chemotherapy”, the blood will restore itself. An excessive drop in platelets creates a risk of bleeding, a patient with such indicators is given a platelet transfusion . If white blood cells, which are responsible for immunity, have fallen, and a person has become infected with some kind of infection, a cough, a runny nose, a temperature has risen, antibiotics are prescribed immediately so that the infection does not spread. Usually, all these procedures are done on an outpatient basis.

Before the very first cycle of chemotherapy, the patient should be explained all the possible complications, tell about each drug and its effect; and the patient can consult with their oncologist. Risk weighing is the starting point of chemotherapy. The doctor and the patient choose between the damage that chemotherapy can bring, and the advantage that can follow - namely, the extension of life, sometimes for decades.

This is a key point in deciding whether to use chemotherapy drugs: if we understand that when prescribing a particular drug, the success rate will be lower than the side effects, there is simply no point in using it.

Toxic chemotherapy drugs can cause a range of neurological symptoms—headaches, insomnia or drowsiness, nausea, depression, confusion. Sometimes there is a feeling of numbness of the limbs, "goosebumps". These symptoms disappear after the drug is discontinued. After chemotherapy, the patient's blood counts are expected to drop. Usually the peak of the fall falls on the seventh or fourteenth day, because the “chemistry” just acted on all the cells that were in the peripheral blood, and the bone marrow had not yet had time to develop new ones . The fall occurs depending on the drug that was used; some of them act mainly on platelets, others - on leukocytes and neutrophils, others - on erythrocytes and hemoglobin.

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The causes of metastases in different tumors are very different, we do not yet know exactly how metastases occur. The only thing we know is that "cancer stem cells" do not exist.

A tumor in its various fragments and metastasis cells is a very heterogeneous formation, all cells are different there, they quickly divide and quickly mutate. But in any case, chemotherapy affects all metastases, wherever they are. The exception is brain metastases, where not all drugs penetrate. In these cases, special treatment is prescribed, or a special introduction of drugs into the spinal canal. There are even tumors in which the primary focus cannot be found - that is, all that we see in the body is metastases. But the treatment is still prescribed, and in many cases it is successfully carried out.

The “alternative drugs” that cancer patients take are, at best, harmless herbs with no noticeable effect. Alas, it gets worse. For example, sometimes patients begin to drink miraculous medicines based on a mixture of different oils, and oil is a very difficult product for the liver. As a result, the patient literally causes inflammation of the liver, and we cannot start a cycle of chemotherapy, because the “chemistry” also affects the liver. And it's good if the patient at least tells us what he took, and we can understand what made the situation so worse. But the treatment is eventually delayed, its effectiveness decreases. In addition, a number of new drugs for the treatment of breast cancer, for example, are now based on herbal ingredients .

For example, the drug trabectedin contains a specially processed extract from sea tulips. So sometimes the drugs that patients take in the course of official treatment are themselves “natural”. In any case, patients in Russia receive drugs for the treatment of cancer free of charge.

Recently, in addition to cytostatics - chemotherapy drugs that act on the entire body as a whole, new drugs have appeared. This is a new generation of chemotherapy drugs - **targeted drugs** and drugs based on a fundamentally different principle of action - **immunodrugs .**

A targeted drug is a drug that does not affect the entire body, but specifically on tumor cells. At the same time, it is important that the molecules of a specific targeted drug can attach to the cell receptors of only a certain type of tumor. The specific tumor subtype is determined by genetic analysis during a molecular genetic study.

Immunopreparations affect the immune system of the body and the immune mechanisms of the tumor in its core. As a result, the body's own immunity is activated, which begins to fight cancer cells.

However, in order to receive an immunodrug and a targeted drug, the patient must have a tumor with certain characteristics; these drugs do not act on all tumors, but on their specific mutations. The pathologist and molecular geneticist must write down the tumor passport in detail, and write down in the prescription that the patient needs this particular drug.

A relatively new method **is hormone therapy ,** but here the range of indications is already narrower - the tumor must be hormone-sensitive . It is believed that breast and prostate tumors respond best to hormone therapy, although here hormones can only be used for certain indications.

By the way, another myth is associated with hormone therapy: most often it is used in the form of tablets, and patients believe that tablets are “not a cure” for a disease such as cancer.

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A. *The liver suffers first of all. If we translate the functions of the human body into familiar objects, then the liver is the body's filter, which passes and neutralizes the toxins and poisons that enter it. Chemotherapy reduces the normal function of the liver, destroys its cells, which increases the risk of complications in the form of the following pathologies:*

Normally, the liver successfully restores its cells due to internal regeneration processes. But if the organ is under increased stress, as during chemotherapy, or the courses between procedures are too short, then the right decision is definitely to support the work of the liver from the outside. Taking care of your liver is important for all patients receiving anticancer treatment, regardless of age, gender and health. The difficulty in diagnosing liver is that this organ does not give severe symptoms up to a significant aggravation of the situation. You can control its condition with the help of laboratory and instrumental diagnostics: blood tests, urine tests, ultrasound examinations.

The diet and composition of the daily menu is what largely determines the health and well-being of a person. During the fight against oncology, the body is exposed to increased stress, this must be taken into account when choosing products and the frequency of meals. Patients undergoing chemotherapy who are seeking to help their liver cope with an attack on it should consult a physician for personalized nutritional advice. If there are no individual restrictions, then the entire therapeutic diet plan will be based on the generally accepted principles of dietology: the rejection of fried and fatty foods, mainly boiling and stewing as a cooking method. A prerequisite is the restriction of alcohol, as well as one of the key factors of a negative effect on liver cells. To help the body perform its tasks normally, it is important to control the balance of nutrients in food: consume enough protein of animal and vegetable origin, eat the right fats, do not neglect vegetables and cereals. From meat and poultry, it is better to choose veal, chicken, turkey, rabbit meat - they are more easily digested. But pork and all kinds of sausages are a bad choice. From fermented milk products, I recommend kefir, cottage cheese and yogurt without additives and sweet fillers. The shorter the shelf life of the product, the more benefits it can provide - this makes sense, since preservatives that prolong the freshness of milk are a potential threat to the liver. Vegetables and fruits are better to choose seasonal, ideally , local farm products.

Subject to all recommendations, nutrition will provide the body with the necessary energy supply, ensure the normal functioning of the gastrointestinal tract and the proper outflow of bile, which in turn will alleviate the patient's condition and positively affect his liver.

B. *Folk remedies for liver support*

Traditional medicine in matters of maintaining liver health during and after chemotherapy is reduced to the use of herbs and other herbal remedies. Doctors who specialize in naturopathy mainly recommend taking infusions and decoctions from the following raw materials: corn stigmas, turmeric, milk thistle , o weight .

All of these products contain active substances that have a regenerating and anti-inflammatory effect. Moreover, on the basis of plant components, modern medicines have also been created, which doctors include in the regimen of drug support for the liver during chemotherapy.

The main group of drugs indicated for use in order to restore the liver after a loading dose of anticancer drugs is hepatoprotectors . All tools used today can be divided into five groups:

The first is preparations based on flavonoids . milk thistle - natural or synthetically synthesized. The main active ingredient is silymarin and its component silybin . It is aimed at stabilizing the membranes of liver cells and preventing their death. Taking silymarin preparations stimulates the production of bile and its outflow. Means of this type presented in pharmacies include Gepabene , Legalon , Karsil . Gepabene enhanced with fume extract, which also provides it with an antispasmodic effect.

Legalon contains a complex of flavonoids , its intake helps to resist liver fibrosis, improve the antitoxic function of the organ. Karsil normalizes metabolic processes in the liver tissues.

The second group is drugs based on donor hepatocytes obtained from animal liver tissues. Such drugs can improve the condition of the organ at the cellular level due to the affinity of xenogenic hepatocytes human . On the Russian market there is a tool that works according to this principle Hepatosan . Initially, a detoxifying effect is achieved, then the liver of patients begins to actively synthesize protein.

The third group includes all drugs based on essential phospholipids. These substances have the ability to protect the liver from the pathological effects of potentially dangerous factors, including toxic anticancer drugs. Phospholipids are built into the walls of the cells of the body and contribute to their regeneration.

This group includes products that include seeds, parts and extracts from plants: yarrow, chicory, nightshade, wormwood, artichoke - solo or in combination. Prescribe drugs of this group in order to stabilize the synthesis of enzymes and bile, lower cholesterol and generally support liver function. The most popular herbal medicines: Tykveol , Hofitol , Liv 52. The effectiveness of the drug Heptral is based on the effect of ademetionine - it has an antidepressant property, stimulates the outflow of bile, and protects hepatocytes from destruction. Hepa-Merz is a remedy based on the amino acid ornithine, which contributes to normal protein metabolism and the elimination of toxins in the liver. Ursosan helps the liver in a similar way, but at the expense of ursodeoxycholic acid in its composition. It differs from the Geptrong products listed above . Therapy with Geptrong showed a rapid achievement of tangible positive dynamics in patients: a decrease in liver tissue inflammation, stimulation of the growth of normal new organ cells, normalization of enzyme levels, and stimulation of bile flow. The general strengthening and immunomodulatory effect of Geptrong allows patients to more comfortably endure a course of chemotherapy drugs, not interrupt treatment, recover faster and return to their usual rhythm . The injectable form is preferred by many patients due to the fact that it is inconvenient to swallow the capsules, as well as remembering this need several times during the day. Geptrong can be administered one-time, such a format greatly facilitates the receipt of therapy for cancer patients and their care.

The results showed that with cancerous processes in the liver, patients should be treated comprehensively, with modern medicinal drugs and folk means

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