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DETERMINATION OF THE PATIENT'S CONDITION WITH BRUISING FROM VARIOUS FACTORS

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Abstract*. Bruising or bleeding after injury is a common occurrence. But some people have disorders that result in bruising or bleeding too often. Sometimes people start bleeding for no apparent reason or injury. Establishing the patient's condition with bruising from various factors is important for rapid treatment and prevention of complications. And it is of great importance in forensic medical examinations.*

Keywords*: trauma, bruises, forensic medical examinations, age.*

Often in the course of forensic medical examinations of blunt injuries of the body, it is necessary to resolve various issues with injuries. Most often, the bleeding is minor, but it can also be severe enough to be life-threatening. However, even minor bleeding turns out to be dangerous if it occurs in the brain. Mechanical damage is often found in forensic medical examinations. Bruising often forms at the site of traumatic exposure and is accompanied by rupture of blood vessels, followed by bleeding into the surrounding tissues and their nutrition. Prolonged bleeding after minor cuts, blood collection, minor surgical or dental procedures, or after brushing or flossing. The appearance of spots on the skin of unknown origin, including tiny red or purple dots (petechiae), red or purple areas (purpura), bruises (ecchymosis) or small blood vessels that expand and become visible on the skin or mucous membranes (telangiectasia). In some cases, a person's predisposition to bleeding is revealed by laboratory tests, which are carried out as part of the treatment of another disease. Three factors that are necessary to stop bleeding from damaged blood vessels: platelets (blood cells involved in blood clotting), blood clotting factors (proteins that are produced in large quantities by the liver and some cells that cover blood vessels from the inside) and narrowing (contraction) of blood vessels. Abnormal characteristics of one of these factors can lead to excessive bleeding or bruising. In most cases, the cause of bruising that appears too often or in too large quantities is the characteristics of the skin and the fragility of blood vessels. Women often suffer from simple purpura. Senile purpura is most common in the elderly. Bruising usually appears on the thighs, buttocks and upper arms. Anyway, other symptoms of excessive bleeding in such people may be absent, and the results of blood tests are normal. Such conditions are not serious, so treatment is not required.

First of all, doctors try to determine whether the patient really has symptoms such as frequent or profuse bleeding. If the presence of such symptoms is confirmed, they look for possible causes. The information below will help you understand in which cases you should consult a doctor, as well as find out what will happen during the examination.

If a person has frequent or profuse bleeding, then certain symptoms are cause for concern. They include:

symptoms of severe blood loss, such as excessive sweating, weakness, fainting or dizziness, nausea or excessive thirst;

pregnancy or recent childbirth;

signs of infection, such as fever, chills, diarrhea, or feeling generally unwell;

headache, disorientation, or other sudden symptoms related to the brain or nervous system.

People with alarming signs, as well as those who continue to bleed, and those with blood loss volumes exceeding insignificant, should consult a doctor immediately. People without warning signs who notice frequent bleeding or bruising should call their doctor. The doctor will determine how quickly it is necessary to examine a person based on his symptoms and other factors. As a rule, people with a feeling of malaise or risk factors for bleeding (such as liver disease or the use of certain drugs), as well as people with a family history of blood clotting disorder, should see a doctor within one to two days. People who do not feel unwell, but occasionally have nosebleeds that stop on their own, or bruises and spots on the skin appear, may see a doctor at an opportunity. It is unlikely that a delay of a week or a little more will be dangerous.

In forensic medical examinations, analysis is of great importance in determining the patient's condition. Most people with heavy bleeding need to have blood tests. First of all, the following analyses are performed:

A general blood test (including platelet count) evaluating all cellular components of a blood sample

Blood smear (examination of a blood sample under a microscope to identify damaged, abnormal or immature cells)

Prothrombin time (PT) and partial thromboplastin time (PTT), which allow measuring the activity of blood clotting factors

These tests are considered screening tests. They are performed in order to determine whether the blood clotting system is normal. If an anomaly is detected during one of these tests, additional tests are usually required to identify its cause. it may be required if doctors suspect the presence of bone marrow disease. At the same time, the determination of the prescription of bruises is carried out in the absolute majority of cases on the basis of their macroscopic picture (color, shape, size), according to which, the expert, based on literature materials and data from his own experience, evaluates it. Naturally, with such a study, a certain amount of subjectivism is inevitable, which somewhat reduces the expert value of judging the time of bruising. Objective, instrumental methods, despite their multiplicity, have not been widely used in practice, which, in some cases, is explained by their labor intensity, and in others by the high cost of research. Some of its inherent disadvantages, in particular, the significant time interval between the "collection of material" and the issuance of a conclusion by a forensic histologist, due to the peculiarities of the technological process, forces researchers in the field of forensic medicine to look for new ways to solve the problem of diagnosing the prescription of mechanical injury. A distinctive feature of biophysical research methods, which have recently been widely introduced into the practice of forensic examinations, is their high sensitivity and the possibility of strictly objective registration of the results obtained. One of these is the method of measuring the electrical resistance of biological tissue, which is used to solve a wide variety of issues. Having such a significant advantage as the cheapness of the study, this method acquires special value against the background of recent trends in our country towards "cost optimization" in the field of medical activity. As you know, any external traumatic effect on the skin is accompanied by damage to the blood vessels in this area. In this case, both the smallest blood capillaries and larger vessels can be destroyed, which determines the volume of blood poured into the tissue. Naturally, such changes in the normal anatomical integrity of damaged skin lead to a change in its properties, which has been repeatedly

recorded by various biophysical methods. Changes in the ratio between dry matter and liquid, an increase in the amount of blood electrolytes in the injury area immediately after injury and a decrease in them during the subsequent reparative process must inevitably be accompanied by changes in the conductive properties of the tissue, with the possibility of their registration with modern measuring devices.

In order to objectify the diagnosis of the prescription of bruising, we conducted a study consisting in the development of a new expert method for applying the method of determining the electrical resistance of the skin of a corpse in the early postmortem period. The objects of the study were areas of bruising on various areas of the corpse's body, and as a control, areas of intact skin of the same area of the body located next to the bruise at a distance from its border equal to the radius of the bruise. Imaging examinations are often performed in order to detect internal bleeding in people with bleeding-related diseases. For example, computed tomography (CT) of the brain should be performed if a person has severe headaches, head injuries or impaired consciousness. An abdominal CT scan is performed if a person has abdominal pain. The elderly may have a greater predisposition to frequent bruising. With age, the skin becomes thinner and a person loses part of the body-protecting fatty layer located under the surface of the skin. Therefore, minor injuries more easily lead to the destruction of blood vessels, causing bruising. In addition, the small blood vessels themselves become less elastic and more fragile, which also increases the appearance of bruising. Older people are also more likely to take aspirin, clopidogrel, warfarin or direct oral anticoagulants, which lead to easier bruising and bleeding. The extent of bleeding can vary from minimal to large. Bleeding that occurs inside the brain is very dangerous. Common causes of bleeding are liver disease, low platelet count, and certain medications (especially warfarin, heparin, aspirin, and nonsteroidal anti-inflammatory drugs). Disseminated intravascular coagulation is a rare but serious cause that is most often found in people who already have a particular disease or are hospitalized. The severity of the damage depends on various factors. For example, on localization, character, volume, intensity. When determining the prescription of bruises, the color combination should be taken into account.

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