



out. The female patients, depending on the breast cancer progression after treatment, were divided into two groups: the one consisted of 179 people “without breast cancer progression” and the second one - of 63 (26.0%) people “with verified breast cancer progression”. The average age of the patients was  $57.3 \pm 0.69$  years.

On the basis of the data obtained, it can be concluded that there is a clear dependency on the increase in the persons' percentage with breast cancer progression and the stage of the disease. There is no significant difference between the two research groups in the course of the study of a female average age, the frequency of the right or left mammary glands lesions, the number of regional lymph nodes affected by metastases, except for an average tumor size, where the rates in patients with verified progression of breast cancer are significantly higher. The longest period to verify the progression of breast cancer is common for stage II B of the disease, with the Luminal-A subtype of the tumor.

As a result of the retrospective study, we can draw the following conclusions: all of the listed: woman's age, localization of tumors in the right or left breast, the number of regional lymph nodes affected by metastases do not affect the breast cancer progression; within breast cancer progression, larger average tumor size is noted, especially with the Luminal-A the subtype of the tumor; the longest period to verify the progression of breast cancer is common for stage II B of the disease, with the Luminal-A subtype of the tumor.

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**LASER RADIATION EFFECT  
ON THE PROTEOLYSIS STATE OF RAT LIVER**

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Proteolysis is an enzymatic rupture of peptide bonds in proteins. In some pathological conditions there is an excessive activation of it, which is an important pathogenetic chain in the development of destructive, inflammatory, allergic reactions, disorders of hemostasis. In its turn, the resonant nature of electromagnetic laser radiation oscillations influences the state of the microcirculatory bed and fibrinolytic activity.

The purpose of the work was to elucidate the nature of laser radiation on the fibrinolytic system state and proteolysis in rat liver.

The study was conducted on 48 white non-linear male rats weighing 120-150g, which were kept on a standard diet of vivarium. Laser irradiation was carried out through previously shaved skin on the liver area in 60 seconds for 10 (group 1), 20 (group 2) and 30 (group 3) days with 24 hour intervals at LGN-207-A apparatus ( $\lambda=632.8\text{nm}$ , beam diameter 0.3 mm). Decapitation of rats was performed under ether anesthesia in dynamics at the end of the course of laser radiation (first, tenth, twentieth and thirtieth days). The control group consisted of intact rats, which were decapitated at the same time as the experimental ones. The tissue proteolytic activity was determined by the lysis of azoalbumine, azocaseine and azocolagene. The drugs used in the work were manufactured by Simko LTD, Lviv. Statistical processing was performed by means of Student t-criterion. The results of the research were expressed as a percentage of the control.

Theten-day course of laser irradiation (one day after its completion ) caused the proteolysis system activation, which was manifested in the increase of azoalbumine, azocaseine and azocolagene. Twenty -and thirty daily course of laser irradiation has weakly influenced the great - and low molecular proteins – the content of azoalbumine degradation products and azokazeine differed a little from the control. The effect of these irradiation courses on colagene degradation was significant: an increase in the products of azocolagene degradation equaled to 93% and 57% for the 2nd and 3rd groups, respectively.

In 10 days after the end of the laser radiation, proteolytic activity remained high in the 1st group. High - and low molecular proteins degradation increased: azokazeine and azoalbumine increased by 83% and 93% respectively. Azocolagene content had a tendency to decline , but



remained significantly higher (48%) of the control parameters. High proteolytic activity concerning collagenase (206% and 155% respectively) remained in the 2nd and 3d groups. Activities in relation to high - and low molecular proteins remained without changes. By the 30th day, there was no complete normalization of proteolytic activity in the study groups.

It is believed, that helium-neon laser radiation leads to changes of protein charges, their conformational structure. When laser radiation interacts with protein molecules, a combinational radiation scattering or a resonant absorption of energy by a protein can occur. The destruction of the solvate shells, the reduction of electrostatic repulsion stipulates an increase in protein fluctuation, their coagulation.

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## **THE POSSIBILITIES OF COMPUTED TOMOGRAPHY IN DIAGNOSIS OF COLON CANCER**

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Based on the study of 25 patients with colon cancer, the possibilities were examined and the diagnostic effectiveness of computed tomography (CT) was evaluated. The inclusion of this method in the diagnostic algorithm enables you to pre-determine the spread of tumor lesions according to the international TNM classification. Establishing the radiological stage of the disease involves determining the location of tumor, the extent of damage to the intestinal wall, the assessment of regional and retroperitoneal lymph nodes, the tumor of adjacent organs, the presence of distant metastases.

Between 2018 and 2019, 14 men and 11 women with colon cancer were examined. In all patients, the research results were verified histologically as a result of biopsy during colonoscopy and in the course of subsequent surgery. Spiral CT with intravenous contrast and subsequent reconstruction of the obtained images made it possible to correctly determine the extent and prevalence of colon cancer before surgery. CT more accurately than colonoscopy found the localization of tumor in a specific part of the colon. On CT an endophytic tumor is detected in the shape of thickening of the intestinal wall, uneven narrowing of the lumen, uneven contours, and infiltration of the surrounding tissue. An exophytic tumor is detected in the shape of an additional soft tissue formation in the intestinal cavity, which adheres to the intestinal wall with a broad base, with uneven contours, with uneven contrast accumulation. Propagation to the neighboring organs (stage T4) is diagnosed on the basis of the following symptoms: disappearance of a layer of the border of the connective tissue and adipose tissue, deformation of the contour of an organ, and its growth by tumor. Of great importance for the choice of tactics for further treatment is the assessment of the regional and retroperitoneal paraaortic and paracaval lymph nodes. The probability of metastatic damage to the lymph nodes is assessed on the basis of a thorough qualitative and quantitative analysis using an algorithm similar to the well-known X-ray algorithm for describing pulmonary shadows. It is necessary to evaluate the following characteristics of the lymph nodes: location, quantity, size, shape, sharpness and irregulars of the borders, uniformity of structure and density change due to accumulation of contrast. It is also important to assess the condition of large blood vessels in the tumor area, which is important in the process of subsequent surgical treatment of the patient.

The use of CT in a complex of endoscopic and radiation methods for the diagnosis of colon cancer enables you to get an idea not only about the spread of the tumor along the length and around the intestine, but also about metastases to the lymph nodes and other organs. This allows the attending oncologist to choose the right treatment tactics. CT in the postoperative period of treatment enables you to more accurately assess the immediate and long-term results of surgical, comprehensive or combined treatment. Thus, CT is a modern method of radiation investigation, which is necessary and highly informative in the diagnosis and assessment of the spread of colon cancer.