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INFLUENCE OF ENVIRONMENTAL FACTORS ON THE MORPHOMETRY OF THE SPLEEN

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Abstract. *Cancer diseases associated with spleen damage during chemotherapy are one of the most pressing problems in the field of oncology. In most cases, spleen damage, which is a known predictor of the patient's condition during chemotherapy in cancer patients, can be caused by profound changes in the immune system.*

Anticancer therapy should be accompanied by appropriate evaluation and management, even in patients with acute splenic injury due to cancer. As acute splenic injury progresses to chronic splenic disease, these patients need a systematic and balanced approach. In the context of tumor-related diseases, successful prevention and treatment are aimed at preserving the function of the spleen, as well as improving the quality of life processes (Campbell G.A, Okusa M.D-14).

Purpose of the work. *The aim of the study is to study the normal structure of the spleen of rats and its morphometric indicators and biochemical aspects in the pathology of the spleen and its correction in chemotherapy (for example: cisplatin, paclitaxel and doxorubicin).*

Keywords. *spleen, morphometric indicators, biochemical aspects, chemotherapy.*

ВЛИЯНИЕ ФАКТОРОВ ОКРУЖАЮЩЕЙ СРЕДЫ НА МОРФОМЕТРИЮ СЕЛЕЗЕНКИ

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Аннотация. *Онкологические заболевания, связанные с поражением селезенки при химиотерапии, являются одной из наиболее актуальных проблем в области онкологии. Во многих случаях повреждение селезенки, которое является предиктором прогноза для пациента во время химиотерапии рака, может привести к глубоким изменениям в иммунной системе.*

Лечение рака, даже у пациентов с острым повреждением спинного мозга, вызванным раком, должно сопровождаться соответствующей оценкой и лечением. При быстром переходе острой спастичности в хроническую таким пациентам требуются системные и сбалансированные меры. В контексте опухолевых заболеваний успешная профилактика и лечение направлены на сохранение функции селезенки, а также на улучшение качества жизненных процессов (Кэмпбелл Г.А., Окуса М.Д.-14).

Цель работы. *Целью исследования является изучение нормальной структуры селезенки крыс и ее морфометрических показателей, а также биохимических аспектов при патологии селезенки и ее коррекции при химиотерапии (на примере: цисплатин, паклитаксел и доксорубицин).*

Ключевые слова. *селезенка, морфометрические показатели, биохимические аспекты, химиотерапия.*

TALOQ MORFOMETRIYASIGA MUHIT OMILLARINING TA'SIRI

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Annotatsiya*. Kimyoterapiya - onkologik yordam ko'rsatish orqali tanadagi saraton kasalligining oldini olishga yordam beradigan tibbiy davolash. Rinoreyani davolashda kimyoterapiyadan foydalanish keng tarqalgan amaliyot bo'lib, bemorga immunitet tizimining buzilishi kabi jiddiy asoratlarni keltirib chiqarishi mumkin bo'lgan tibbiy holat beriladi.*

Inson biror narsadan qo'rqsa, undan qo'rqmasligi kerak. Ushbu maqolaning maqsadi aholiga kerakli ma'lumotlarni taqdim etish va ularga zarur ma'lumotlarni taqdim etish va qo'llab-quvvatlashdir. Ushbu tadqiqotning maqsadi tadqiqotni muvaffaqiyatli yakunlash ehtimolini oshirish, tadqiqotni muvaffaqiyatli yakunlash ehtimolini oshirish va tadqiqotni muvaffaqiyatli yakunlash ehtimolini oshirishdir (Campbell G.A, Okusa M.D-14).

Ishning maqsadi*. Tadqiqotning maqsadi kalamushlar taloqining normal tuzilishi va uning morfometrik ko'rsatkichlari va taloq patologiyasida biokimyoviy jihatlarini o'rganish va uni kimyoterapiyada tuzatish (masalan: sisplatin, paklitaksel va doksorubitsin).*

Kalit so'zlar*: taloq, morfometrik ko'rsatkichlar, biokimyoviy jihatlar, kimyoterapiya.*

The urgency of the problem. In humans, the spleen traditionally performs this function only in the fetus, but it retains the ability to produce cells even in adults. Under certain pathological conditions, the spleen can also produce cells that are normally produced in the bone marrow. (Aldayarov N.S. and others 2008; Shapk Yu.G., 2009; Zavaleeva S.M., Sizova E.A., Chirkova E.N., 2010; Fedorovskaya N.S., 2011; Kourilsky P., Truffa-Bachi R. (2001); Smith Kevin G, Hunt John, 2004; Lee Z., 2012). There are many incoming macrophages in the circulating blood volume. Their main task is to phagocytize old erythrocytes, as well as leukocytes and platelets. A large part of the iron released by macrophages from the hemoglobin of phagocytized erythrocytes is directed to the bloodstream. This iron is reused in the bone marrow to produce new red blood cells. In addition, macrophages of the spleen produce the pigment bilirubin from the broken-down hemoglobin. It passes to the liver, where it becomes a component of bile (Shapkin Yu.G., Maslyakov V.V., 2009;). It is known that the spleen is not of vital importance, but it belongs to the peripheral lymphoid tissues.

Cancer diseases associated with damage to the spleen during chemotherapy are one of the most pressing problems in the field of oncology. In most cases, damage to the spleen, which is known to predict the patient's condition during chemotherapy in cancer, can lead to a profound change in the immune system.

Anticancer therapy should be accompanied by appropriate evaluation and management, even in patients with acute splenic injury due to cancer. As acute splenic injury progresses to chronic splenic disease, these patients need a systematic and balanced approach. In the context of tumor-related diseases, successful prevention and treatment are aimed at preserving the function of the spleen, as well as improving the quality-of-life processes (Campbell G.A, Okusa M.D-14).

Purpose of the work. The aim of the study is to study the normal structure of the spleen of rats and its morphometric indicators and biochemical aspects in the pathology of the spleen and its correction in chemotherapy (for example: cisplatin, paclitaxel and doxorubicin).

Material and methods. Experiments were conducted on 250 white female outbred rats born in vivarium conditions. 6-month-old rats were involved in it. In the experiments, the ethical rules for the use of animals and the requirements of the Helsinki Congress were observed. Before the start of the experiments, all sexually mature rats were quarantined for one week and, after excluding somatic or infectious diseases, they were transferred to a vivarium under the same conditions as usual. During the experiment, the behavior and physiological state of animals in the control and experimental groups were monitored. The rats were divided into 13 groups (n = 250): control group I (n = 40); groups 2-13 (n = 210) - experimental animals were exposed to 7,12-dimethylbenzanthracen carcinogen to induce mammary cancer in the experimental groups. The tumor marker CA-15-3 (Cancer Antigen 15-3) was determined in the blood. A 68.9% success rate was achieved, i.e., 145 mice were treated with 7,12-dimethylbenzanthracene, a mammary carcinogen, at a dose of 0.1 mg subcutaneously in the mammary gland of 210 female rats. Rat mammary cancer was called. After that, we divided 145 outbred white female rats with mammary gland cancer into 12 more groups. In group 2 (n = 12), rats with cancer were treated with paclitaxel intravenously at a dose of 0.2 mg/kg and gastric metal intragastrically for 21 days. 0.7 ml of distilled water was introduced through the probe; Group 3 (n = 12) received cisplatin intravenously and intragastrically by gastric metal gavage at a dose of 0.4 mg/kg to cancer rats for 21 days. during which 0.7 ml of distilled water was added; Group 4 (n=12) treated cancer rats with a combination of cisplatin at a dose of 0.4 mg/kg intravenously and paclitaxel at a dose of 0.2 mg/kg and intragastric 0.7 ml of distilled water was injected through a stomach metal probe for 21 days; Group 5 (n=12) cancer-bearing rats were administered paclitaxel intravenously at a dose of 0.2 mg/kg and thymalin intramuscularly at a dose of 0.01 mg/day for 7 days; Group 6 (n=12) cancer-bearing rats were administered cisplatin intravenously at a dose of 0.4 mg/kg and thymalin intramuscularly at a dose of 0.01 mg/day for 7 days; Group 7 (n = 12) cancer-bearing rats were administered a combination of cisplatin at a dose of 0.4 mg/kg intravenously and paclitaxel at a dose of 0.2 mg/kg intramuscularly and thymalin at a dose of 0.01 mg/day for 7 days; Group 8 (n = 12) experimental animals were treated with paclitaxel at a dose of 0.2 mg/kg intravenously and intragastrically by gastric metal gavage for 21 days in cancer-bearing rats 0.7 ml of pomegranate seed oil was added; Group 9 (n=12) cancer rats were treated with cisplatin 0.4 mg/kg intravenously and intragastrically by gastric metal gavage for 21 days. 0.7 ml of pomegranate seed oil was added; Group 10 (n=12) treated cancer rats with intravenous cisplatin at a dose of 0.4 mg/kg and paclitaxel at a dose of 0.2 mg/kg and intragastrically for 21 days. 0.7 ml of pomegranate seed oil was injected through a gastric metal probe; Group 11 (n=12) cancer-bearing rats were administered paclitaxel intravenously at a dose of 0.2 mg/kg and pomegranate seed oil (0.7 ml) intragastrically via a metal gastric tube for 21 days, and thymalin (0.01 mg/day) intramuscularly for 7 days; Group 12 (n=12) cancer-bearing rats were administered cisplatin intravenously at a dose of 0.4 mg/kg and pomegranate seed oil in a volume of 0.7 ml via an intragastric metal tube for 21 days, and thymalin in a dose of 0.01 mg per day for 7 days as an intramuscular injection; Group 13 (n=12) treated cancer rats with a

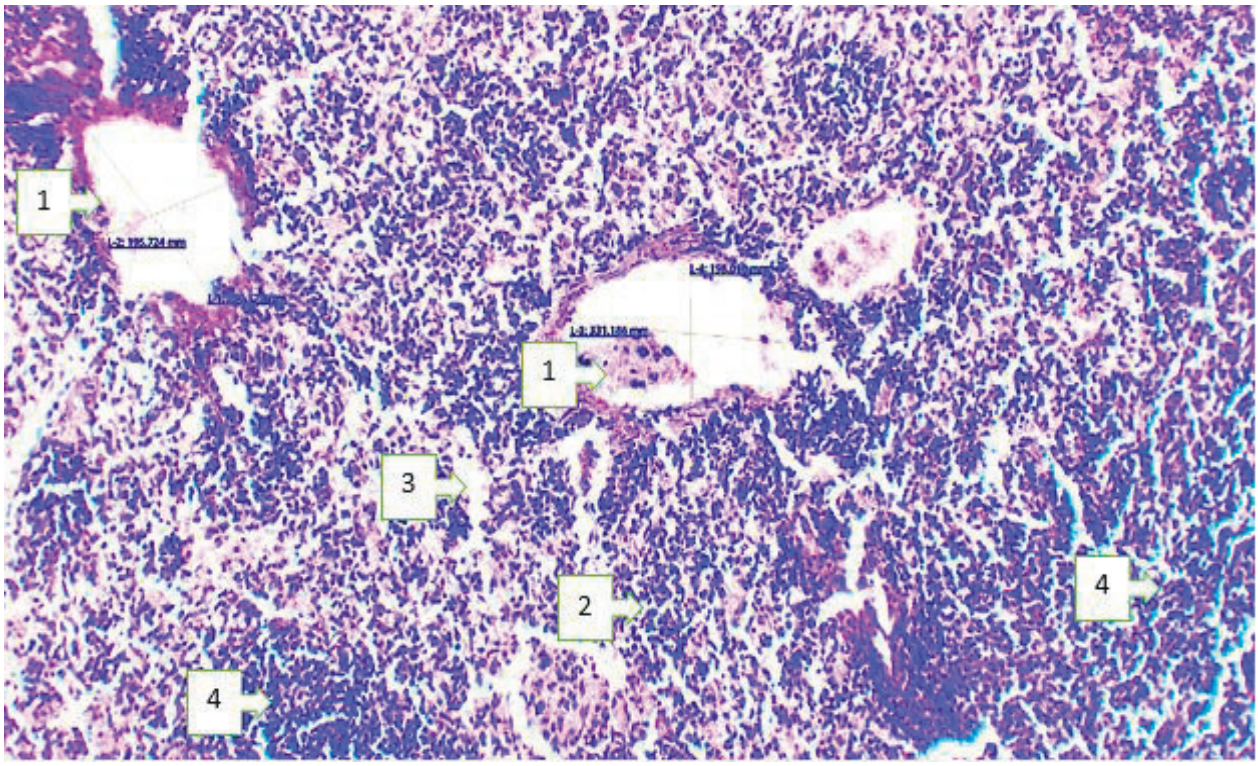
combination of cisplatin at a dose of 0.4 mg/kg intravenously and paclitaxel at a dose of 0.2 mg/kg and intragastric 0.7 ml of pomegranate seed oil for 21 days and 0.01 mg of thymalin per day for 7 days as an intramuscular injection were administered through a gastric metal probe.

A total of 250 mice were used in the experiments, of which only 12 died during the experiments, which led to the development of mammary gland cancer in the experimental animals (Table 2.1).

To model and simulate mammary cancer in outbred female white rats, rats are exposed to the carcinogen 7,12-dimethylbenzanthracene in the mammary gland from 6 months of age. with a single subcutaneous injection of 0.1 mg, in 210 experimental animals, from 7-8 weeks, mammary cancer was observed in 145 (68%) rats.

The control group received 0.7 ml of distilled water intragastrically through a metal stomach tube for 21 days.

After this experiment, 145 of the 210 experimental animals developed mammary cancer during the study. During the study, 53 experimental animals did not develop mammary cancer, and 12 died.



Morphometric appearance of the spleen of a 5-month-old white mongrel after the introduction of chemicals. Staining G-E.ob 4x20 ok.
Splenic blood vessels are dilated, stasis, and the lumen is enlarged, and the walls are thickened (1). Red pulp area of the spleen: splenic cords (chordae lienalis) are reduced, hyperchromic, and young B-lymphocytes are increased (2). Splenic sinusoids (sinus lienalis) cavity is wide, scattered breakdown of erythrocytes (3). The area of the white pulp of the spleen is reduced (4).

Conclusion.

In rats treated with pomegranate seed oil, the initial parameters describing the structural and functional state of the spleen were significantly different from those in experimental animals treated with chemotherapy.

In our study, when pomegranate seed oil was used in chemotherapy for breast cancer, the spleen parameters of the study groups increased, but when we compared those groups with the experimental groups that received pomegranate seed oil and thymol together, a greater increase in all parameters, including absolute spleen weight, volume, and indicators, was observed.

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