

M.G. Skikevych, O.A. Toropov, L.I. Voloshyna, P.I. Yatsenko, D.V. Stehlovskiy,
I.V. Boyko, D.S. Avetikov
Poltava State Medical University, Poltava

ANALYSIS OF CLINICAL PARAMETERS OF SCAR TISSUE OF THE SCALP AND NECK DEPENDING ON THE CIRCADIAN RHYTHM OF THE PATIENT

e-mail: alexandr.toropov.science@gmail.com

Wound healing is a complex and dynamic process. It consists of phases that are closely related. The formation of the postoperative scar is influenced by: the topography of the surgical field, the duration of the inflammatory process, the method of surgical intervention, the time of surgical intervention and the patient's chronotype. In 1970, the Swedish psychologist Oscar Okvist began the scientific study of chronotypes. According to him, the term "chronotype" is used to define the individual characteristics of the circadian rhythm of man. Biological rhythms play an important role in adaptation and survival in the environment. According to previous research, biological rhythm affects not only the mental state, but also reparative functions during wound healing and rehabilitation in the postoperative period.

Key words: cryopreserved placenta, scar, chronotype, extract, skin, biological rhythms.

М.Г. Скікевич, О.А. Торопов, Л.І. Волошина, П.І. Яценко, Д.В. Стебловський,
І.В. Бойко, Д.С. Аветіков

АНАЛІЗ КЛІНІЧНИХ ПАРАМЕТРІВ РУБЦЕВОЗМІНЕНОЇ ТКАНИНИ ГОЛОВИ ТА ШІЇ В ЗАЛЕЖНОСТІ ВІД ЦИРКАДНОГО РИТМУ ПАЦІЄНТА

Загоєння ран це складний і динамічний процес. Він складається з фаз, які тісно пов'язані між собою. На формування післяопераційного рубця впливають: топографія хірургічного поля, тривалість запального процесу, спосіб оперативного втручання, час оперативного втручання та хронотип пацієнта. У 1970 році шведський психолог Оскар Оквіст розпочав наукове вивчення хронотипів. За його словами, термін «хронотип» використовується для визначення індивідуальних особливостей циркадного ритму людини. Біологічні ритми відіграють важливу роль в адаптації та виживанні в навколишньому середовищі. За даними попередніх досліджень, біологічний ритм впливає не тільки на психічний стан, а також на репаративні функції під час загоєння ран та реабілітації в післяопераційний період.

Ключові слова: кріоконсервована плацента, рубець, хронотип, екстракт, шкіра, біологічні ритми.

The study is a fragment of the research projects "Diagnosis, surgical and medical treatment of patients with injuries, defects and deformations of tissues, inflammatory processes of maxillofacial localization", state registration No. 0119U102862, "Introduction of the components of the molecular age into the periodontal tissue in case of burned diseases for the development of methods of prevention and treatment", state registration No 0120U101151.

Intensive development of plastic cosmetic maxillofacial surgery is growing every year. This leads to an increase in the number of people who turn to specialists in this field. In some cases, this leads to an increase and increase in the number of complications and an increase in the percentage of pathological scars [9].

Wound healing is a complex and dynamic process that consists of three phases. They are closely related. The formation of the postoperative scar can be influenced not only by the topography of the operating field and the duration of the inflammatory process. The following factors also influence: the method of surgery, suturing, the time of surgical intervention and chronotype of the patient [5].

In 1970, the Swedish psychologist Oscar Okvist began the scientific study of chronotypes. According to him, the term "chronotype" is used to define the individual characteristics of the circadian rhythm of man. He proposed a questionnaire to determine the chronotype of patients. He identified three types of chronotype in his research :

- morning;
- intermediate;
- evening.

Patients with morning type accounted for 15 % of the total number of respondents, with intermediate – 70 %, and with evening – 15 %. This is how Okvist described chronotypes in his scientific research. So people with the morning chronotype are characterized by waking up early, active mainly until noon. The intermediate type wakes up 2 hours later. They stay active all day. Evening type – wake up late, little able to work until lunchtime, but productivity increases until the evening.

Biological rhythms play an important role in adaptation and survival in the environment. According to data from previous studies, biological rhythm affects not only the mental state. It also affects reparative functions during wound healing and rehabilitation in the postoperative period [3, 4, 7].

The purpose of the study was to develop the optimal method of prevention of pathological scars in patients with different types of chronotype after planned surgical interventions at -intra and postoperative stage using placental cryoextract.

Materials and methods. The research was conducted in the Department of Maxillofacial Surgery on the basis of the Municipal Enterprise “Poltava Regional Clinical Hospital. M.V. Sklifosovsky” Poltava Regional Council. To study the materials, we conducted an analysis of patients who were hospitalized for planned surgical interventions for congenital neck cysts and tumor-like formations in maxillofacial surgery. A total of 60 patients took part in the study, who were hospitalized for planned surgical interventions in the department of maxillofacial surgery. Patients were interviewed during the hospitalization, as well as questionnaires to determine the chronotype.

We performed clinical examination and photoregistration of patients on the ninetieth day (90 days) after surgery, 180 and 360 days.

Patients were divided into 3 groups after the questionnaire:

The first group – 20 patients, the first group included patients who had improved the protocol of surgical care. We proposed the introduction of the drug “Cryocel – cryoextract of the placenta” (DP “Interdisciplinary Science Center of Cryobiology and Cryomedicine HAH, AMS and Ministry of Health of Ukraine”, Ukraine) into the wound during the intraoperative phase. The first group was divided into 2 subgroups depending on the biorhythm of the person:

The first subgroup (1a – patients with morning chronotype) consisted of 10 patients.

The second subgroup (1b are patients with evening chronotype) subgroup consisted of 10 patients.

The second group consisted of 20 patients. In the second group, as in the first group during surgery, the drug “Cryocel” was injected into the wound. It was also used on the 90th and 180th days of scar formation. We performed electrophoresis with the drug mentioned above. Patients in group 2 were also divided into 2 subgroups according to circadian rhythms.

The first subgroup (2a – with morning chronotype) consisted of 10 people.

The second subgroup (2b – with the evening chronotype). It consisted of 10 patients.

The third group consisted of 20 patients. This is a control group. We used the standard method of preventing the formation of pathological skin scars. This group was also divided into 2 subgroups.

The first subgroup (3a with morning chronotype) consisted of 10 people.

The second subgroup (3b – with evening chronotype) 10 patients, respectively.

All patients, regardless of group and subgroup, were operated on in the morning.

We used the parameters to obtain results and to assess wound healing and the quality of postoperative scar formation:

P-1 – Vascularization (from 0 to 2 points);

P-2 – Pigmentation (from 0 to 2 points);

P-3 – Height of the scar (from 0 to 2 points);

P-4 – Surface (from 0 to 2 points);

P-5 – Scar density (from 0 to 2 points);

P-6 – Subjective feelings of the patient (itching) (from 0 to 2 points);

P-7 – Subjective feelings of the patient (pain) (from 0 to 2 points).

Results of the study and their discussion. We analyzed the dynamics of changes in clinical indicators of scar tissue. In subgroup 1a on the 90th day, moderate hyperemia was observed in only 20 %, there is isopigmentation in 70 % of cases. It is noteworthy that the number of cases where the height of the scar is more > 2 mm occurred in almost 30 percent, and its uniform increase was determined in 90 % of cases. This probably indicates the further formation of a normotrophic scar. This has been proven by us in previous studies.

In contrast to other literature data, moderately compacted scar in this group was observed in 70 % of cases, but the pronounced induration is up to 20 %. Against the background of intraoperative administration of cryopreserved placenta extract, mild discomfort at time of observation was determined in almost 70 %, severe discomfort was expressed in only 10 % of cases. In contrast to other literature data for 90 days of follow-up, in almost 90 % of cases, patients did not notice pain.

On the 180th day after surgery, almost 90 % of cases have normal skin pigmentation. Hypopigmentation was recorded in only 1 patient (10 % of cases). In our opinion, this indicates a purposeful improvement of microcirculation in superficial and deep arthrovenular skin anastomoses due to local administration of the drug “Cryocel” at the intraoperative stage and partially correlates with other literature data. In three patients, which is 30 % of the cases on this day of observation, there is a soft-elastic

scar with no complaints of itching. There are no complaints of pain in 100 % of cases, which is quite correlated with our previous studies.

Data for 360 days of the postoperative period: isopigmentation was visualized in 100 %, the height of the scar above the skin level is less than 1 mm in 80 %, and the scar surface was close to the intact skin in 60 % of cases. In the absence of complaints of subjective feelings, mild or severe discomfort is absent in 100 % of cases. This indicates the efficacy of the proposed author's method of treatment.

We analyzed the dynamics of clinical indicators of the state of scar tissue in patients of subgroup 1b (with the evening type of chronotype), who underwent the intervention in the morning on the 90th day.

A slightly different picture was observed in contrast to subgroup 1a. In 40 % there was moderate hyperemia, and in 50 % of cases isopigmentation with the presence of hyperpigmentation in two people (20 % of cases). In 50 % the height of scars more than 2 mm was determined in 50 % of cases, with a uniform increase in the level of intact skin in 6 people (60 % of cases). Our attention was paid to 4 patients (40 % of cases) with an uneven increase above the level of intact skin. In our opinion, this fact indicates the presence of foci with local dyscirculatory hypoxia, which already on this day of observation requires additional medical correction. There are two ways to introduce the active biological substance into the scar tissue by injecting it there by actively transferring the substance by electrophoresis. Any injection is limited, but the anatomical and biological integrity of the connective tissue is compromised. We offer additional therapy of the postoperative scar on the 90th day of observation by administering the drug "Cryocel" using electric direct current. This is likely to further reduce the incidence of pathological scarring at later follow-up in patients with evening chronotype compared to those operated on in the morning. This hypothesis was confirmed by analysis of biochemical parameters in homogenates of scar tissue.

On the 90th day of observation, a moderately compacted scar was observed in 70 % of cases, and severe soft tissue induration in 3 patients (30 % of cases). 4 patients were perceived mild discomfort (40 % of cases), in 30 % – recorded complaints of severe discomfort. On the other hand, in 7 patients (70 % of cases) we did not record any complaints of pain. This probably indicates the possible formation of a hypertrophic scar, but without signs of keloidization, and this does not contradict the literature.

The focus should be on the 180th day of the postoperative period. There was an improvement in all parameters. The dynamics was slightly lower than in patients of subgroup 1a with morning chronotype, who were operated in the first half of the day, namely moderate hyperemia was recorded in 3 patients, and hyperpigmentation in 5 (50 % of cases). Draws attention to the decrease in scar height in 90 % of cases with its uniform increase, which was observed in 8 patients (80 % of cases). In contrast to the previous group, 8 patients (80 % of cases) had a pronounced moderately compacted scar, and 1 (10 % of cases) had a pronounced soft tissue induration. One patient (10 % of cases) complained of pain.

On the 360th day of postoperative intervention, the clinical picture as a whole improved compared to the 180th day. There were slightly worse characteristics compared with subgroup 1a: moderate hyperemia was observed in 20 % of cases, pigmentation in 10 %, and in 5 patients (50 % of cases) the height of the scar above the skin surface ranges from 1 to 2 mm, with a uniform increase was observed in 60 %, and the surface close to intact skin in 40 % of cases. There are no complaints of pain in the whole subgroup. In 2 patients (20 % of cases) there was a slight discomfort.

These patients within the 2nd clinical group were divided into subgroups 2a and 2b, taking into account the human chronotype, which was additionally performed on these days by local intracranial administration of "Cryocel" extract by electrophoresis.

On the 90th day of the postoperative period in patients of subgroup 2a there was moderate hyperemia in only 1 patient (10 % of cases), and hypopigmentation in 2 people (20 % of cases). The height of the scar above the skin surface in the range from 1 to 2 mm was recorded in 60 % of cases, which is less than in patients of group 1, even compared with subgroup 1b, these data can be compared with data for 180 days. We also noted a uniform increase in the scar above the level of intact skin, which was recorded in 80 % of cases. Moderate compaction was observed in 7 patients (70 % of cases). In contrast to the previous group, patients' complaints of itching were absent in 40 % of cases, with 1 patient complaining of discomfort and pain. This probably indicates the directed formation of connective tissue without its chaotic growth with the presence of protoelastic fibers. This fact has previously been proven by morphological studies.

Analysis of indicators of subgroup 2a. On the 180th day, a significant improvement should be noted, both in the optical visualization of scar tissue and in the analysis of patient complaints and subjective sensations. It is noteworthy that normal skin pigmentation was present in 100 % of cases. The height of the scar in 40 % of cases was close to intact skin. There was an interesting fact that in 3 patients (30 % of cases) there is a soft-elastic scar which in patients of the first group, especially subgroup 1b was observed

on the 360th day. In our opinion, this indicates the correctly chosen tactics of additional local administration of the drug "Cryocel" on the 90th day of the postoperative period. It should be noted that in 50 % of cases there were no complaints of minor itching. Pain was absent in all patients in this subgroup.

Correlation analysis of clinical parameters at day 360 was performed. It should be noted the best clinical characteristics of skin scars among all study groups. In 100 % of cases there was isopigmentation with vascularization close to intact skin, the height of the scar at the level of the skin in 9 patients (90 % of cases) is less than 1 mm. Scars of soft-elastic consistency was observed in 8 patients (80 % of cases), without the presence of subjective (itching) and without pain and mild or severe discomfort.

When conducting a comparative analysis of the dynamics of changes in clinical parameters in patients of subgroup 2b with detected evening chronotype, but operated in the first half of the day should be noted their slower decrease, both quantitatively and qualitatively. In our opinion, this requires mandatory preventive measures on the 90th and 180th day, in contrast to subgroup 2a, where the use of electrophoresis on the 90th, and especially on the 180th day can be the method of choice.

We found that on the 90th day in 7 patients (70 % of cases) vascularization was like to intact skin, moderate redness and hyperpigmentation was observed in 30 % and 10 %, respectively. In 3 patients (30 % of cases) the height of the scar above the intact surface was more than 2 mm, and in 3 cases there was an uneven increase. In our opinion, this requires additional preventive action and has been proven morphologically and biochemically in studies by other authors.

It should also be noted the presence of moderately compacted scar in 8 patients (80 % of cases) and 2 cases with severe induration of soft tissues. Subjective sensations: 50 % of patients in this subgroup experienced mild discomfort, 3 patients complained of severe discomfort, and 2 – pain. Data for the 90th day: the number of clinical manifestations that prove the probable formation of a pathological scar in this subgroup is greater than among patients with morning chronotype.

This probably proves the need for further molecular, biological and genetic studies of the influence of molecular clock genes on the mechanisms of reparative processes in the skin and the introduction of new methods to improve them, both intra- and postoperatively. Similar data were obtained by the staff of our department on the influence of polymorphism of elastin and collagen genes on the mechanisms of postoperative scarring.

Given the electrophoresis with cryopreserved placenta extract intracranially on the 90th day and on the 180th day of observation, the clinical picture became more positive. We observed less pronounced qualitative indicators than subgroup 1a: moderate hyperemia was observed in 20 % of cases with isopigmentation in 8 patients and scar hypopigmentation in 2 people. The positive point should be noted. In 20 % of cases, the height of the scar is less than 1 mm, and a uniform increase was observed in 9 patients (90 % of cases) with a moderately compacted scar. With regard to complaints, there was itching (1 patient), no one complained of pain.

On the 360th day, it should be noted a gradual decline in all quality indicators and bringing them closer to the norms of intact skin. Normal vascularization was observed in 90 % of cases, and a uniform increase in 50 % with the approach of the skin surface to intact. Moderate compaction was observed in 60 %, and soft-elastic scar in 40 % of cases. There are no complaints of pain, in 1 case there were complaints of mild discomfort.

Analysis of the dynamics of clinical indicators of the 3rd control clinical group. Regardless of the established morning or evening chronotype of the patient, their difference in digital data should be noted in contrast to the first and especially the second clinical group. In our opinion, this indicates the need for additional preventive measures, both intraoperative and in the near and distant periods of postoperative treatment. This is especially true for people with a detected evening chronotype.

In group 3a on the 90th day it should be noted that isopigmentation of the scar was presented in 40 % of cases, as well as hypopigmentation. The height of the scar above the skin surface more than 2 mm was observed in 60 % of cases. This indicates the possible processes of chaotic formation and direction of primarily collagenous and protoelastin fibers and necessitates intraoperative prophylaxis. It should be noted that non-uniform surface increase occurred in 50 % of cases. In 70 % of cases there is a moderately compacted scar, and in 30% there was induration of the surrounding tissues. Subjective feelings: 4 patients complained of discomfort (40 % of cases), 1 patient complains of severe pain (10 % of cases).

On the 180th day, the qualitative characteristics of the indicators decreased in a positive direction, but not significantly. Remained moderate hyperemia in 30 %, hypopigmentation in 40 %, and scar height on the border of 1–2 mm was observed in 9 patients (90 % of cases), which does not contradict the literature data in previous literature studies. Slight discomfort it was noted in 90 % of cases. Severe discomfort was observed in 1 patient in the form of pain.

On the 360th day, the following qualitative changes in clinical indicators took place. Namely: despite the fact that the skin is close to intact, it was observed in almost 80 %, in 2 patients moderate hyperemia and in 2 more hypopigmentation of the scar was recorded. This may indicate incomplete restoration of local microcirculation in the tissues surrounding the scar. It should also be noted that in 6 patients the height of the scar was 1–2 mm above the skin surface, and a uniform increase was observed in 60 % of cases. This gives us significantly more negative data than in the previous 2 clinical groups. This is evidenced by the presence of moderately compacted scar in 90 % of cases and itching which was observed in 2 patients.

Somewhat different data were obtained in patients of group 3b, which once again proves the occurrence of some desynchrony in patients with evening chronotype. Patients was underwented surgery in the morning, especially when detecting the expression of mRNA genes of the negative link of regulation and proves the need for changes in the standard protocol of surgical treatment of patients with established evening chronotype under the conditions of scheduled surgery in the morning.

On the 90th day in 90 % of cases moderate hyperemia was recorded, and in 20 % of cases with scar hyperpigmentation. It is noteworthy that the height of the scar above the skin surface more than 2 mm was observed in 70 % of cases with an uneven increase above the level of intact skin. Along with these qualitative indicators, moderate scar sealing with severe induration should be noted in 5 patients who also experienced mild discomfort and itching (40 % of seizures), and 6 patients complained of severe discomfort, and 2 of whom complained of severe pain.

We recorded similar changes on the 180th day. It should be noted that the height of the scar above the skin surface more than 2 mm was observed in 3 patients. This indicates a non-reversible chaotic growth of connective tissue and without preventive action at this time of observation there is a high probability of hypertrophic or keloid scar formation. This is also evidenced by the fact that in 20 % of cases patients complained of pain.

On the 360th day, it should be noted the presence of 3 patients with moderate scarring (30 % of cases) and pigmentation. It is noteworthy that in 9 patients (90 % of cases) there was a moderately compacted scar. One patient had severe soft tissue induration. This indicates the formation of a pathological, not normotrophic scar. Our data correlate with literary ones.

Circadian rhythm plays a fundamental role in reparative functions [1, 10]. Montaruli and the authors in their research describe the fact that there is a link between the biological clock and diseases [6], such as diabetes, obesity [8]. Chronotype plays an important role in the life of every person [2].

When conducting digital analysis of these indicators P1 – P7, it should be noted that the best result was in subgroup 2a. These patients were administered “Cryocel” during the operation and on the 90th and 180th day of scar formation were additionally electrophoresed with the above drug. Positive results were also noted in group 1a. These are patients with the morning type of chronotype who were injected with the drug “Cryocel”, but without additional methods of prevention.

The optimal result should also be noted in the subgroups with the evening chronotype, namely in 2b and 1b compared with the control group. Thus, subgroups 3a and 3b did not reach zero during the entire observation period. The difference between the indicators of this group was 24.3 %.

Conclusion

Comparing the digital data of clinical indicators of the three clinical groups, we concluded that the preventive measures, both in the intraoperative and subsequent postoperative period. The best aesthetic result is observed in patients with combined use of intraoperative injections of the drug “Cryocel” with its introduction by electrophoresis on the 90th and 180th day. This is statistically confirmed for patients with evening chronotype operated in the morning, given a certain degree of dysentery. For people with morning chronotype, operated in the first half of the day, the introduction of the drug “Cryocel” by electrophoresis on the 180th day is the method of choice. It should be noted that a single intraoperative injection of “Cryocel” is not enough to form an optimal postoperative scar. This is especially true for patients with evening chronotype. But it is important for patients who have had surgery in the morning.

Our clear digital differences in the clinical parameters of scar tissue in the control group indicates the need for intra- and postoperative prevention of pathological scarring of the skin with the use of autologous biotissues and in particular cryopreserved placenta extract.

References

1. Toropov A, Avetikov D, Steblovskiy D, Lokes K, Boyko I. Zalezhnist formuvannya rubtsevykh tkanyn shchelepno-lytsevoyi lokalizatsiyi vid tsyrkadnykh rytmiv. Poltava state medical university. Ukrainian Dental Almanac, (1), 2022:25-28. doi:10.31718/2409-0255.1.2022.04. [in Ukrainian].

2. Barone N, Safran T, Vorstenbosch J, Davison PG, Cugno S, Murphy AM. Current Advances in Hypertrophic Scar and Keloid Management. *Semin Plast Surg.* 2021; 35(3):145–152. doi:10.1055/s-0041-1731461.
3. Belfry KD, Deibel SH, Kolla NJ. Time of Day Matters: An Exploratory Assessment of Chronotype in a Forensic Psychiatric Hospital. *Front Psychiatry.* 2020; 11:550597. Published 2020 Dec 18. doi:10.3389/fpsyt.2020.550597.
4. Cardinali DP, Brown GM, Pandi-Perumal SR. Chronotherapy. *Handb Clin Neurol.* 2021;179:357–370. doi:10.1016/B978-0-12-819975-6.00023-6.
5. Gauglitz GG. Management of keloids and hypertrophic scars: current and emerging options. *Clin Cosmet Investig Dermatol.* 2013 Apr 24;6:103–14. doi: 10.2147/CCID.S35252. PMID: 23637546; PMCID: PMC3639020.
6. Montaruli A, Castelli L, Mulè A, Scurati R, Esposito F, Galasso L, et al. Biological Rhythm and Chronotype: New Perspectives in Health. *Biomolecules.* 2021; 11(4):487. <https://doi.org/10.3390/biom11040487>.
7. Rodrigues M, Kosaric N, Bonham CA, Gurtner GC. Wound Healing: A Cellular Perspective. *Physiol Rev.* 2019;99(1):665–706. doi:10.1152/physrev.00067.2017.
8. Roveda E, Montaruli A, Galasso L, Pesenti C, Bruno E, Pisanis P, et al. Rest-activity Circadian Rhythm and Sleep Quality in Patients with Binge Eating Disorder. *Chronobiol. Int.* 2018;35:198–207. doi: 10.1080/07420528.2017.1392549.
9. Roy T, Chavez J, Reid R. Skin Deep: Perception of Scars After Cranial Vault Reconstruction. *Cleft Palate Craniofac J.* 2021;58(11):1376–1381. doi:10.1177/1055665620984349.
10. Yang S, Luo YJ, Luo C. Network Meta-Analysis of Different Clinical Commonly Used Drugs for the Treatment of Hypertrophic Scar and Keloid. *Front Med (Lausanne).* 2021;8:691628. Published 2021 Sep 9. doi:10.3389/fmed.2021.691628.

Стаття надійшла 3.04.2021 р.

DOI 10.26724/2079-8334-2022-2-80-146-150
UDC (616.36:616.155.392)-056.5

I.M. Skrypnyk, G.S. Maslova, T.V. Lymanets
Poltava State Medical University, Poltava

OVERWEIGHT AND OBESITY AS RISK FACTORS FOR CHEMOTHERAPY-INDUCED HEPATOTOXICITY IN PATIENTS WITH ACUTE LYMPHOBLASTIC LEUKEMIA

e-mail: maslovaas1708@gmail.com

Obesity is one of the proven risk factors for all types of tumors and is one of the reasons for reducing the effectiveness of specific chemotherapy and the development of chemotherapy-induced injury of liver. This article presents the results of functional liver state monitoring in patients with acute lymphoblastic leukemia during remission induction chemotherapy, taking into account the overweight and obesity. High toxicity of acute lymphoblastic leukemia chemotherapy regimens with a general tendency to hypoproteinemia development has been demonstrated. The overweight and obesity potentiate cytostatic-induced liver injury in patients with acute lymphoblastic leukemia with maximum risk in case of primary liver injury due to tumor exposure.

Key words: acute lymphoblastic leukemia, obesity, chemotherapy, L-asparaginase, liver injury.

І.М. Скрипник, Г.С. Маслова, Т.В. Лиманець

НАДЛИШКОВА ВАГА ТА ОЖИРІННЯ ЯК ФАКТОР РИЗИКУ ЦИТОСТАТИК ІНДУКОВАНИХ УРАЖЕНЬ ПЕЧІНКИ У ХВОРИХ НА ГОСТРУ ЛІМФОБЛАСТНУ ЛЕЙКЕМІЮ

Ожиріння належить до доведених факторів ризику розвитку всіх видів пухлин, а також є однією із причин зниження ефективності специфічної хіміотерапії, а також розвитку хіміотерапевтично індукованих уражень печінки. У даній статті наведені результати спостереження за функціональним станом печінки у хворих на гостру лімфобластну лейкемію у динаміці індукції ремісії з урахуванням надмірної ваги і ожиріння. Продемонстровано високу токсичність схем хіміотерапії гострих лімфобластних лейкемій із загальною тенденцією розвитку гіпопротеїнемії. Надмірна вага і ожиріння потенціюють розвиток цитостатикіндукованих уражень печінки у хворих на гостру лімфобластну лейкемію із максимальним ризиком за умов первинних уражень печінки, зумовлених впливом пухлини.

Ключові слова: гостра лімфобластна лейкемія, ожиріння, хіміотерапія, L-аспарагіназа, ураження печінки.

The study is a fragment of the research project "Improvement of diagnostic methods, treatment and prophylaxis of internal organs drug induced lesions", state registration No 0121U113862.

In recent decades, there has been a global trend toward increasing the number of overweight and obese people. According to modern research, obesity is associated with an increased incidence of leukaemias in adults [2, 3, 6, 7]. Obesity has not been shown to affect the risk of developing acute lymphoblastic leukemia (ALL) in children. However, the presence of obesity leads to aggravation in overall and relapse-free survival in patients with ALL, both adults and children [3, 6, 12, 14]. It has been proven that children with obesity and ALL have a 50 % increased risk of recurrence compared to children with normal body weight [7].