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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии
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თანამშრომლობითა და მისი პატრონაჟით

ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ
ТБИЛИСИ - НЬЮ-ЙОРК

GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board and The International Academy of Sciences, Education, Industry and Arts (U.S.A.) since 1994. **GMN** carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

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2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

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3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შედეგის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფხიხლებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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THE ROLE OF ONCOLOGICAL PROCESS IN OCCURRENCE OF POSTOPERATIVE EVENTRATION

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Annotation. Patients with oncological diseases of the abdominal organs are known to suffer from the signs of secondary immune deficiency, cachexia, anemia etc., which cause a high risk of occurrence of postoperative eventration.

Examination of certain specific features of eventration occurrence with underlying oncological process will allow better understanding the latter in the development of the postoperative complication.

Objective of the research was to examine the effect of malignant neoplasm on the mechanical strength of the laparotomy wound postoperative scar in the experiment, and to study clinically occurrence of postoperative eventration development in patients with malignant neoplasms of the abdominal organs, which will allow better understanding the role of oncological process in the development of this postoperative complication.

The experimental studies were carried out on 78 laboratory rats operated on by means of laparotomy 3.0 cm in length. Heren's carcinoma was preliminary grafted under the skin of the external femoral surface in the main group of animals.

The mechanical strength of the laparotomy wound scar was determined on the 1st, 3rd, and 5th days after surgery by means of measuring abdominal pressure at the moment of scar rupture.

Clinical studies were carried out involving 140 patients who underwent midline laparotomy for surgical treatment of abdominal diseases. The main group included 98 patients with malignant neoplasms of the abdominal organs. The patients were divided into two subgroups depending on the stage of oncological process. The group of comparison included 42 patients with surgical non-oncological pathology of the abdominal organs.

The results of the experimental study are indicative of malignant process in the body resulting in the reduction of the postoperative scar strength on the 3rd day after surgery. The clinical studies conducted prove a reliable increase of the occurrence of "local" postoperative complications including eventration and postoperative wound suppuration with underlying oncological process at the late stages of the disease. This specific feature should be considered when applying stitches and drainage on the laparotomy wound in this group of patients.

Thus, oncological process at the late stages of the disease promotes reduced strength of the laparotomy wound postoperative scar, and results in the increase of eventration occurrence and suppuration of the postoperative wound.

Introduction. Eventration is one of the rare but the most dangerous postoperative complications in the abdominal surgery registered in 0.5-2.35% of patients [4]. When postoperative eventration penetrates a suppurating wound the lethal outcome reaches 40-65%. Moreover, repeated eventration is registered in 12.5% in such situations [5].

Eventration occurs most frequently after urgent surgery on the abdominal organs of weakened patients of the old and elderly ages with a low immune-biological condition of the body [1,2].

Patients with oncological diseases of the abdominal organs are known to suffer from the signs of secondary immune deficiency,

cachexia, anemia etc., which cause a high risk of occurrence of postoperative eventration [7,9].

Examination of certain specific features of eventration occurrence with underlying oncological process will allow better understanding the latter in the development of the postoperative complication.

Objective. to examine the effect of malignant neoplasm on the mechanical strength of the laparotomy wound postoperative scar in the experiment, and to study occurrence of postoperative eventration development in patients with malignant neoplasms of the abdominal organs, which will allow better understanding the role of oncological process in the development of this postoperative complication.

Materials and methods. The experimental studies were carried out on 78 mature nonlinear rats of an average age of both genders with the body weight no less than 180 g distributed into two groups – the main one and the group of comparison.

The main group of animals including 42 animals approximately two weeks after subcutaneous injection of Heren's carcinoma cell suspension in the external femoral surface, when the tumor became 1.0 x 2.0 cm in size, laparotomy 3,0 cm in length was performed under general i/v anesthesia (chloral hydrate solution in the dose of 200-250 mg/kg). The group of comparison included 36 laboratory rats, who underwent laparotomy of an appropriate length only.

The suspension of Heren's carcinoma cells was obtained by means of its removal from another animal. The tumor was chopped into the fragments from 0,05 to 1,0 mm in size, and the connective tissue elements were removed. Ficoll density gradient centrifugation was used to isolate cellular detritus, blood elements, mucus, connective tissue cells, and gross fragments. A sample of a daily culture of cells in the culture medium in their content 4×10^8 in 1 ml was used for the transplantation [6].

Mechanical strength of the laparotomy wound postoperative scar was measured by means of G.V.Petrovych method (2010) on the 1st, 3rd and 5th days after laparotomy. The abdominal pressure was measured at the moment of rupture of the laparotomy wound postoperative scar, under general i/v anesthesia (chloral hydrate solution in the dose of 200-250 mg/kg) [8].

The clinical study of our research involved 140 patients who underwent midline laparotomy for surgical treatment of diseases of the abdominal organs at different medical institutions of Chernivtsi region.

The main group included 98 patients with malignant neoplasms of the abdominal organs who were divided into two groups depending on the stages of oncological process. The first subgroup included 46 individuals at the I-II stages of the disease, and the second subgroup of the main group included 52 patients at the II-IV stages of the disease. The group of comparison involved 42 patients with acute surgical non-oncological pathology of the abdominal organs.

The distribution of patients depending on the surgery performed on the abdominal organs is presented in Table 1.

Table 1. Distribution of patients from both groups of examination depending on the surgery performed, abs.,%

Surgery performed	Group of patients		Abs.	%
	Comparison	Main		
Distal stomach resection	9	18	27	19,3
Gastroenteroanastomosis	5	14	19	13,6
Biliodigestive anastomosis	3	15	18	12,9
Enterectomy	7	2	9	6,4
Right hemicolectomy (colonic resection)	4	16	20	14,3
Left hemicolectomy	2	8	10	7,1
Sigmoid resection	7	11	18	12,8
Hartmann's operation (rectosigmoid colon resection)	5	14	19	13,6
Total:	42	98	140	100

Table 2. Mechanical strength of the laparotomy wound postoperative scar with simulated abdominal hypertension at different terms of observation ($M \pm m$), mmHg

Terms of observation, day	Groups	
	comparison n=12	main n=14
1 st day	102.7 ± 4.89	97.7 ± 3.43 p>0.05
3 rd day	121.8 ± 5.6 p ₁ <0.05	102.3 ± 5.44 p<0.05; p ₁ >0.05
5 th day	140.9 ± 4.65 p ₁ <0.05	119,6 ± 3,55 p<0.01; p ₁ <0.05

Notes:

1. n – number of observations;
2. p – difference against the values of the group of comparison;
3. p₁ – difference against the values of the preliminary term of observation.

Table 3. Frequency of development of postoperative complications depending on the stage of oncological process, abs., %

Causes of postoperative complications		Group of patients		
		comparison	main	
			first subgroup	second subgroup
«Systemic»	Respiratory failure	3 (7,1%)	2 (4,3%)	2 (8,0%)
	Cardiovascular failure	2 (4,8%)	2 (4,3%)	2 (8,0%)
	Kidney failure	1 (2,4%)	3 (6,6%)	1 (4,0%)
	Multiple organ failure	3 (7,1%)	4 (8,7%)	3 (12,0%)
Total:	9 (21,4%)	11 (23,9%)	15 (28,8%)	
«Local»	Intestinal suture failure	4 (9,5%)	3 (6,5%)	3 (5,8%)
	Acute ulcers of the digestive tract	3 (7,1%)	3 (6,5%)	3 (5,8%)
	Internal bleeding	2 (4,8%)	1 (2,2%)	1 (1,9%)
	Formation of abscesses	2 (4,8%)	3 (6,5%)	4 (11,5%)
	Postoperative wound suppuration	4 (9,5%)	8 (17,4)	14 (23,1%)*
	Eventration	1 (2,4%)	3 (6,5%)	9 (17,3%)*
Total:	16 (38,1%)	21 (45,6%)	34 (65,3%)*, **	
Total number of patients	42 (100%)	46 (100%)	52 (100%)	

Notes:

- * – reliable difference against the values of the 1st experimental group;
 ** – reliable difference against the values of the 2nd experimental group.

There were 78 (55.7%) females and 62 (44.3%) males among the patients involved in the research. Both groups of patients were comparable by the age and gender. An average age of patients in both groups of the study was 60.1 ± 0.95 years. An average length of the laparotomy wound was 27.1 ± 0.25 cm.

All the patients during their hospital stay were provided with standard postoperative treatment according to the protocols of medical aid given to patients with urgent surgical pathology of the abdominal organs.

The obtained results were statistically processed on the personal computer by means of electronic tables Microsoft Excel and the package of statistical processing program IBM SPSS Statistics. The following parameters were assessed: mean values of the data obtained (M), their standard deviations (m), reliability of statistical data (p) by Student t-criterion. With the aim to evaluate reliability of differences between the percentage shares of both samples Fisher criterion was used.

Results and discussion. Analysis of the results of the study is presented in Table 2. Beginning from the 3rd day of the observation reliably higher values should be admitted in animals from the main group. Gradual increase of the values is registered in both groups of the study during the whole period of observation, but they appeared to be unreliable in the main group on the 3rd day.

Assessing the results of the clinical study presented in Table 3, it should be noted that occurrence of postoperative eventration development prevails among the patients from the second subgroup of the main group, but this difference was reliable only against the group of comparison. Analysis of "systemic" postoperative complications enables to admit the highest occurrence in the main group of patients, especially in the second subgroup of the main group, though this difference is unreliable. The frequency of development of "local" postoperative complications in the second subgroup of the main group prevails reliably that of the group of comparison and the first subgroup of the main group. Reliable difference in the formation of abscesses should be noted in the patients from the second subgroup of the main group against the group of comparison.

Summing up the results of the experimental studies it should be noted that malignant process in the body results not only in inhibited maturation of the granulation tissue in the laparotomy wound, but in reduced strength of the postoperative scar beginning with the 3rd day after surgery performed. The results of the clinical study obtained are indicative of are liable increase of occurrence of "local" postoperative complications only including suppuration of the postoperative wound and eventration when oncological process is at the late stages of the disease. This specific feature should be considered when sutures and drainage are applied on the laparotomy wound in this group of patients.

Conclusion. Oncological process at the late stages of the disease promotes reduced strength of the laparotomy wound postoperative scar and results in an increased occurrence of eventration and suppuration of the postoperative wound.

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Abstract. Eventration is one of the rare but the most dangerous postoperative complications in the abdominal surgery registered in 0.5-2.35% of patients.

Eventration occurs most frequently after urgent surgery on the abdominal organs of weakened patients of the old and elderly ages with a low immune-biological condition of the body.

Examination of certain specific features of eventration occurrence with underlying oncological process will allow better understanding the latter in the development of the postoperative complication.

Therefore, the objective of the research was to examine experimentally the effect of malignant neoplasm on the mechanical strength of the laparotomy wound postoperative scar on small laboratory animals, and to study clinically occurrence of postoperative eventration development in patients with malignant neoplasms of the abdominal organs.

The experimental studies were carried out on 78 laboratory rats operated on by means of laparotomy 3,0 cm in length. Heren's carcinoma was preliminary grafted under the skin of the external femoral surface in the main group of animals.

The mechanical strength of the laparotomy wound scar was determined on the 1st, 3rd and 5th days after surgery by means of measuring abdominal pressure at the moment of scar rupture. 140 were examined who underwent midline laparotomy for surgical treatment of abdominal diseases.

The main group included 98 patients with malignant neoplasms of the abdominal organs who were divided into two groups depending on the stages of oncological process. The first subgroup included 46 individuals at the I-II stages of the disease, and the second subgroup of the main group included 52 patients at the II-IV stages of the disease.

The group of comparison involved 42 patients with acute surgical non-oncological pathology of the abdominal organs.

Both groups of patients were comparable by the age and gender. An average age of patients in both groups of the study was 60.1 ± 0.95 years. An average length of the laparotomy wound was 27.1 ± 0.25 cm.

The obtained results were statistically processed on the personal computer by means of electronic tables Microsoft Excel and the package of statistical processing program IBM SPSS Statistics.

The results of the experimental studies are indicative of the fact that malignant process in the body results not only in inhibited maturation of the granulation tissue in the laparotomy wound, but in reduced strength of the postoperative scar beginning with the 3rd day after surgery performed.

Analysis of the results of our clinical study enables to admit reliable increase of occurrence of "local" postoperative complications including suppuration of the postoperative wound and eventration, especially when oncological process is at the late stages of the disease.

This specific feature should be considered when sutures and drainage are applied on the laparotomy wound in this group of patients. Thus, oncological process at the late stages of the disease promotes reduced strength of the laparotomy wound postoperative scar and results in an increased occurrence of eventration and suppuration of the postoperative wound.

Key words: postoperative scar, eventration.

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