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Results of multicenter observational study «predictors of colectomy in patients with «extremely severe» ulcerative colitis

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ABSTRACT *AIM: to improve the results of treatment of "extremely severe" ulcerative colitis (UC).*
PATIENTS AND METHODS: a multicenter observational prospective "case-control" study was conducted. The study included 71 patients with "extremely severe" UC from June 2019 to October 2021. All patients underwent conservative treatment in accordance with current clinical guidelines. Evaluation of the effectiveness of treatment was carried out on the 3rd and 7th days of therapy, a "response" or "no response" to steroid therapy was stated.
RESULTS: a total of 48 (68%) patients underwent surgery during hospital stay. Twenty-three (32%) patients "responded" to conservative treatment and were discharged without colectomy. A reliable independent predictor of colectomy at the time of hospital stay was the level of albumin less than 29 g/l (OR = 8.6; 95% CI: 2.5–39.9; p = 0.002). On day 3, the reliable predictors were the level of C-reactive protein over 40 mg/l (OR = 9; 95% CI: 2.4–46.1; p = 0.003) and the Mayo index above 7 points (OR = 13.3; 95% CI: 3.3–75.7; p = 0.0009).
CONCLUSION: the study demonstrated that the only reliable and independent predictor of colectomy at admission to the clinic is the level of albumin less than 29 g/l. Reliable factors that make it possible to evaluate and predict the effectiveness of therapy are the level of C-reactive protein more than 40 mg/l and the Mayo index above 7 points on the 3rd day of therapy, as well as the level of C-reactive protein above 30 mg/l on the 7th day.

KEYWORDS: *ulcerative colitis, acute severe ulcerative colitis, colectomy, predictors of colectomy*

CONFLICT OF INTEREST: *the authors declare no conflict of interest*

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INTRODUCTION

According to a systematic review of the literature by Zhao M. et al., in 2021, the incidence of ulcerative colitis (UC) continued to grow and reached 44 cases per 100 000 people in developed countries. The authors of the review also note that approximately 30% of patients with the onset of the disease have a severe attack and develop a total lesion of the mucosal layer of the large intestine [1]. During the first year after the manifestation, 35% of patients are admitted for potentially life-threatening severe UC attack [2]. At the same time, up to 23% of such patients undergo radical surgery — colectomy within the first two years after the onset of the disease [2].

Surgery for patients with severe UC attack, according to a cohort study by Leeds L., et al., is associated with a high rate of postoperative complications, reaching 60% [3]. This is largely due to metabolic disorders, and, above all, to hypoalbuminemia [4]. Thus, with an albumin level of less

than 30 g/l, postoperative mortality can reach 6% [5]. Due to the high risk of adverse outcomes in patients with severe UC attack, it is advisable to select a group of patients whose surgery should be performed earlier than provided for by clinical guidelines.

In this regard, in 2017, the Russian Association of Coloproctology and the Russian Association of Gastroenterology proposed to distinguish out an "extremely severe" UC attack [6].

As a retrospective study conducted earlier in our center showed, the presence of a characteristic endoscopic picture of extensive ulcers with "islands" of mucosal layer of the large intestine, the level of albumin less than 31 g/l and hemoglobin less than 107 g/l can be objective criteria for an "acute severe" UC attack. With the combination of these predictors, the risk of colectomy was 100% [7].

AIM

The purpose of this study is to improve the results of treatment of patients with "extremely severe" UC attack.

PATIENTS AND METHODS

A multicenter observational prospective case-control study was initiated at the Ryzhikh National Medical Research Center of Coloproctology.

Two regional centers participated: the Coloproctology Unit of Samara State Medical Clinic at Samara Medical University and Alexandro-Mariinsky Regional Clinical Hospital (Astrakhan). The incidence of colectomy and acute intestinal complications of UC, and total mortality were studied. It was also planned to identify predictors of colectomy.

From June 2019 to October 2021, 71 patients over the age of 18 were included in the study in the presence of acute severe UC attack diagnosed at the prehospital stage (Table 1). To this end, all patients with a clinical picture of severe UC attack at the time of admission underwent sigmoscopy without bowel cleansing. Upon detection of extensive, merging ulcerative defects with the formation of "islands" of the mucosal layer, at least in one anatomical part of the large intestine, a diagnosis of "acute severe" UC attack was concluded. The criteria for non-inclusion were:

1) Acute intestinal complications of UC (toxic dilation, perforation of the colon, profuse intestinal bleeding);
2) Ineffectiveness of conservative treatment (hormonal resistance and dependence, loss of the effect of biological therapy).

Among all the patients included in the study, patients with total colitis were mainly registered — 65 (91.0%). At the same time, 30 (42.0%) patients had the onset of the disease, and the median duration of the history of UC was 12 (2.5) months. Treatment with systemic steroids previously received 45 (63.0%) patients, thiopurines — 23 (32.0%) patients, and biological therapy was performed in 11 (16.0%) cases.

Association of ulcerative colitis with cytomegalovirus infection (CMV) verified in 23 (35.0%) cases. The presence of CMV infection was detected by PCR in biopsies of the mucosa of the large intestine taken during the first sigmoscopy. The median of the UC severity Mayo index at the admission to the clinic was the maximum value of 9 points (9.9). It is worth noting that the Mayo severity index was calculated in an abbreviated version, without taking into account the endoscopic picture. The medians and mean values of laboratory parameters estimated at the admission of patients to the clinic and at different stages of treatment are presented in Table 1.

Statistical Analysis

Descriptive variables are presented as absolute values for categorical data. Numerical variables with the correct distribution are presented as an arithmetic mean with the standard deviation (± SD). In cases of incorrect distribution, the values are represented by medians indicating interquartile intervals (25%, 75%).

After dividing the patients into 2 groups: surgical (case) and conservative (control), a comparative analysis of all variables was performed using t-test, nonparametric Mann-Whitney test and the Fisher exact test. Before factor analysis, a ROC analysis was performed for numerical variables, as a result of which critical diagnostic values of

Table 1. *Descriptive statistics*

Variables	Value
Male Female	43 (61%) 28 (39%)
Me of age, years	35 (29, 48)
Me of Body Mass Index, kg/m^2	21 (19, 25)
The nature of the lesion of the mucosal layerof the large intestine: Total colitis Left-sided colitis	 65 (91%) 6 (9%)
The nature of the UC course: Acute Chronic (continuous and recurrent)	 30 (42%) 41 (58%)
Me of duration of anamnesis of UC, months	12 (2, 50)
Drug therapy in the anamnesis: Systemic glucocorticosteroids Thiopurines Inhibitor of tumor necrosis factor α Integrin a4ß3 inhibitor	 45 (63%) 23 (32%) 9 (13%) 2 (3%)
Association of colitis with cytomegalovirus infection	25 (35%)
Me of the number of copies of PCR CMV infection	0 (0, 8300)
Me of the Mayo index at admission, points	9 (9, 9)
Average hemoglobin level at admission, g/l	104 (± 22)
Me of albumin level at admission, g/l	30 (26, 31)
Me of level of C-reactive protein upon admission, mg/l	100 (48, 142)
The average value of the Mayo index on the 3rd day of therapy, points	6 (± 1.5)
Me of albumin level on the 3rd day of therapy, g/l	29 (25, 31)
Me of hemoglobin level on the 3rd day of therapy, g/l	99 (88, 115)
Me of C-reactive protein level on the 3rd day of therapy, mg/l	34 (12, 62)
Me of stool frequency on the 7th day of therapy	2 (0, 5)
Average albumin level on the 7th day of therapy, g/l	29 (± 4.3)
Average hemoglobin level on the 7th day of therapy, g/l	107 (± 17)
Me of C-reactive protein level on day 7 of therapy, mg/l	11 (6, 35)

**Me — Median*

predictors were obtained, and the data were converted to binary (yes/no).

Predictors were selected for a factor analysis based on the results of comparative and ROC analyses: age, albumin and C-reactive protein levels at admission; albumin, C-reactive protein levels and the value of the Mayo index on day 3 of the therapy; stool with blood, albumin, hemoglobin and C-reactive protein levels on day 7 of prednisolone treatment. A univariate analysis was performed, the values of the odds ratio for all predictors were obtained. A multivariate analysis was performed using the logistic regression for the identified predictors at the time of admission. Also, a multivariate analysis was carried out separately for predictors on the 3rd and 7th days of steroid therapy. Statistical significance was assumed at $p < 0.05$. Given the observational nature of the study, no preliminary calculation of the sample size was made. Statistical analysis was performed using the software "GraphPadPrism 9.2.0".

RESULTS

To all patients ($n = 71$) included in the study was initiated the steroid therapy with prednisolone at a dosage of 2 mg/kg per 24 hours in accordance with clinical recommendations. To assess the effectiveness of the steroid therapy, a reduced Mayo index of UC activity was used, without taking into account the endoscopic picture. Prior to evaluating the effect of the prednisolone treatment, 2 (3.0%) patients were operated on urgently on day 3 due to the development of acute intestinal complications (toxic dilation and perforation of the colon).

Table 2. *Results of comparative analysis of variables in groups*

Variables	Surgical Treatment n = 48	Conservative Therapy n = 23	Value p
Male gender Female gender	29 (60%) 19 (40%)	14 (61%) 9 (39%)	0,9 0.9
Me of age, years	37 (29, 51)	30 (25, 38)	0.02*
Me of body mass index, kg/m^2	21,5 (18, 26)	21 (20, 24)	0.9
Total lesion of UC	44 (92%)	21 (91%)	0.9
Acute course of UC	23 (48%)	7 (30%)	0.3
Me of duration of anamnesis, months	8 (2, 46)	13 (3, 50)	0.3
Therapy in anamnesis: Systemic steroids Thiopurines Biological therapy	 30 (62%) 13 (27%) 6 (12%)	 15 (65%) 10 (43%) 3 (13%)	 0.9 0.2 0.9
Me of PCR CMV infection, copies × 10^5	0 (0–9500)	0 (0–0)	0.05*
Me of the Mayo index at admission, 9 points	9 (9, 9)	9 (8, 9)	0.05*
Average hemoglobin level at admission, g/l	103 (± 22)	105 (± 22)	0.7
Me of albumin level at admission, g/l	28 (25, 31)	31 (30, 34)	0.0002*
Me of level of C-reactive protein at admission, mg/l	95 (51, 139)	106 (16, 160)	0.8
"Response" on day 3	8 (17%)	14 (61%)	0.0007*
The average value of the Mayo index on day 3, 9 points	7 (± 1)	5 (± 1)	0.0001*
Me of albumin level on day 3, g/l	28 (23, 30)	30 (27, 32)	0.009*
Average hemoglobin level on day 3, g/l	100 (± 19)	103 (± 18)	0.5
Me of C-reactive protein level on day 3, mg/l	36 (19, 67)	13 (7, 61)	0.03*
Meof incidence of stool with blood on day 7	4 (1, 5)	0 (0, 2)	0.0001*
Average albumin level on day 7, g/l	28 (± 4)	32 (± 3)	0.0002*
Average hemoglobin level on day 7, g/l	102 (± 19)	112 (± 13)	0.03*
Me of C-reactive protein level on day 7, mg/l	22 (9, 49)	8 (2, 11)	0.0003*
2nd line therapy: Infliximab	 1 (2%)	 4 (17%)	 0.03*
Tofacitinib	1 (2%)	11 (48%)	0.0001*

**Me –p < 0.005*

In this regard, the effectiveness of the treatment on day 3 was evaluated in 69 patients. A decrease in the Mayo index by 30% or more, indicating the effectiveness of prednisolone on the 3rd day of the treatment, was registered in 22/69 (32%) patients and they all continued therapy at the same dosage. A decrease in the Mayo index by less than 30% from the initial one, or its retention at the same level or increase, was interpreted as a "lack of response" to the prednisolone and was noted in 47/69 (68%) patients.

Among 47 patients who were found to have "no response" to the steroid therapy on day 3, 35/47 (75%) patients continued treatment with prednisolone in the previous dosages, and in the remaining 12/47 (25%) cases, colectomy was performed urgently due to the worse of the patients' status.

Further, in the interval between the 3rd and 7th days, 9 more patients were subjected to colectomy for urgent indications, also due to the aggravation of clinical manifestations. In total, in 21/71 (30%) cases, the revaluation on day 7 was not carried out due to surgical treatment before the specified period.

Thus, among all the patients, the effectiveness of the therapy was evaluated on day 7 in 50 (70%) patients based on the calculation of the frequency of stool with blood, as well as a reassessment of the endoscopic picture and laboratory parameters. The positive effect of the treatment on day 7 was registered in 28/50 (56%) patients, and the absence of effect was observed in 22/50 (44%) cases.

It is worth noting that 8/50 (16%) patients were discharged after reducing the dose of prednisolone on maintenance therapy with salicylates, thiopurines. Line 2 therapy was initiated in 17/50 (34%) patients: infliximab in 5 (10.0%)

Table 3. *ROC analysis for continuous variables*

Predictor	AUC (95% CI)	Value p	Sensitivity (95% CI)	Specificity (95% CI)	Critical level
Age	0.66 (0.53–0.79)	0.03	31 (20–45)	87 (68–95)	> 47 years
PCR of CMV (copies)	0.62 (0.49–0.75)	0.09	–	–	–
Albumin level at admission	0.76 (0.64–0.83)	0.0004	56 (42–60)	87 (68–95)	< 29g/l
Hemoglobin level at admission	0.53 (0.39–0.68)	0.63	–	–	–
The level of C-reactive protein at admission	0.52 (0.36–0.67)	0.8	–	–	–
Mayo Index at admission	0.6 (0.46–0.75)	0.1	–	–	–
Albumin level on day 3	0.69 (0.56–0.82)	0.001	26 (16–40)	95 (79–99)	< 24 g/l
Hemoglobin level on day 3	0.55 (0.4–0.69)	0.5	–	–	–
The level of CRP on day 3	0.66 (0.5–0.81)	0.03	83 (69–91)	61 (41–78)	> 40 mg/l
Mayo index on day 3	0.78 (0.67–0.88)	0.0002	43.5 (30–58)	100 (86–100)	> 7 points
Incidence of stool with blood on day 7	0.8 (0.68–0.92)	0.0002	46 (29–64)	100 (86–100)	> 4 times
Albumin level on day 7	0.78 (0.66–0.9)	0.0006	37 (21–56)	100 (86–100)	< 26 g/l
Hemoglobin level on day 7	0.68 (0.53–0.84)	0.02	41 (24–59)	95 (79–99)	< 94 g/l
CRP level on day 7	0.79 (0.66–0.92)	0.0004	44 (28–63)	95 (79–99)	> 30 mg/l

cases, and tofacitinib in 12 (24.0%) patients. After 7 days of therapy, surgery was carried out in another 27/50 (54%) cases due to "loss of response", futility of further drug therapy or the worse patient status.

Among all the patients, acute intestinal complications developed in 7 (10%) cases, steroid resistance in 39 (55.0%) patients, and ineffectiveness of the 2ndline therapy in 2 (3.0%) patients. In total, 48 (68.0%) patients underwent surgery. The fatal outcome occurred in 2 (3.0%) cases: one patient developed pulmonary embolism after colectomy, the other — postoperative secondary peritonitis and sepsis.

A comparative analysis of categorical and numerical data was carried out between the group of surgical (48 patients) and conservative treatment (23 patients). By gender, extent of the lesion, the nature of the course of UC, body mass index — the groups did not differ statistically significantly (Table 2). The "response" on the 3dday of the therapy was significantly less in the surgical group — 17%, compared with the conservative group — 61% (p = 0.0007), respectively. Also, on the 7th day of the therapy, the effect of the therapy in the colectomy group was observed in 30%, compared with the conservative treatment group in 87% (p = 0.0001), respectively. The biological therapy was significantly more often prescribed in the conservative treatment group: tofacitinib — 2% in the colectomy group, compared with the drug therapy group — 48%, p = 0.0001 and infliximab — 2% in the surgical group, compared with the drug treatment group — 17%, p = 0.03, respectively.

When comparing laboratory parameters, the median albumin level at the time of admission was significantly lower in the surgical group — 28 g/l than in the conservative therapy group — 31 g/l (p = 0.002). On the 3rd day of the steroid therapy, the median albumin level was also lower in the surgical group — 28 g/l compared with the conservative group — 30 g/l (p = 0.009). The median level of C-reactive protein was significantly higher in the surgical group — 36 mg/l than in the conservative group — 13 mg/l (p = 0.03), respectively.

On day 7, the same trend persisted as on day 3 of the therapy. Thus, the average albumin level was significantly lower in the surgical group — 28 g/l, compared with 32 g/l in the conservative group (p = 0.0002). The average hemoglobin level was significantly lower in the surgical group — 102 g/l than in the conservative group — 112 g/l (p = 0.03). The median of C-reactive protein, as well as on day 3, was significantly higher in the surgical group — 22 mg/l, compared with patients from the conservative group — 8 mg/l (p = 0.0003), respectively.

For the subsequent factor analysis, ROC curves are constructed and the critical values of the selected numerical variables are determined (Table 3).

The following variables had significant diagnostic value in predicting colectomy: the age of patients older than 47 years (p = 0.03) and the level of albumin at admission less than 29 g/l (p = 0.0004). On the 3rd day of the therapy: the level of albumin

Table 4. *Univariate and multivariate analyses for predictors of colectomy during steroid therapy*

Predictor	Univariate Analysis		Multivariate Analysis	
	OR (95% CI)	*p*-value	OR (95% CI)	*p*-value
At admission				
Age > 47years	3 (0.8–10.7)	0.1	–	–
Albumin less than 29 g/l	8.6 (2.4–29.3)	0.0007	8.6 (2.5–39.9)	0.002*
On the 3rd day of steroid therapy:				
Albumin less than 24 g/l	7.7 (1.2–86)	0.05	5.4 (0.6–134.8)	0.2
C-reactive protein more than 40 mg/l	7.4 (2.5–22)	0.0007	9 (2.4–46.1)	0.003*
The Mayo index more than 7 points	4.9 (1.8–13.2)	0.003	13.3 (3.3–75.7)	0.0009*
On the 7th day of steroid therapy:				
Stool with blood more than 4 times	6.6 (1.5–23.9)	0.007	3.4 (0.6–21.1)	0.1
Albumin less than 26 g/l	5.7 (1.4–28.2)	0.04	1.2 (0.1–11.9)	0.8
Hemoglobin less than 94 g/l	7.6 (1.6–36.5)	0.01	19 (2.5–120.6)	0.01*
C-reactive protein more than 30 mg/l	9.5 (2.1–45.4)	0.005	8.3 (1.5–68.5)	0.02*

less than 24 g/l ($p = 0.001$) and C-reactive protein above 40 mg/l ($p = 0.03$), as well as the value of the Mayo index above 7 points ($p = 0.0002$).

On the 7th day of the therapy, significant diagnostic value was demonstrated: the incidence of stool with blood more than 4 times per 24 hours ($p = 0.0002$), albumin level less than 26 g/l ($p = 0.0006$), hemoglobin level less than 94 g/l ($p = 0.02$), C-reactive protein level more than 30 mg/l ($p = 0.0004$). The presented variables were converted to a binary data type depending on the critical values obtained (yes/no), after which a univariate analysis was performed.

As a result of the univariate analysis aimed at identifying possible predictors of colectomy, a reliable predictor at admission was an albumin level of less than 29 g/l (OR — 8.6 95% CI: 2.4–29.4, $p = 0.0007$).

On the 3rd day of the therapy, the following were determined as predictors of colectomy: the Mayo index above 8 points (OR — 4.9 95% CI: 1.8–13.2, $p = 0.003$), albumin level less than 24 g/l (OR — 7.8 95% CI: 1.2–86.6, $p = 0.05$), C-reactive protein level above 40 mg/l (OR — 7.4 95% CI: 2.5–22.1, $p = 0.0007$).

For 7th day of the therapy, the following predictors of colectomy were revealed: stool with blood more often than 4 times per 24 hours (OR — 6.6 95% CI: 1.5–23.9, $p = 0.007$), albumin level less than 25 g/l (OR — 5.7 95% CI: 1.2–28.2, $p = 0.04$), the level of C-reactive protein above 30 mg/l (OR — 9.5 95% CI: 2.1–45.4, $p = 0.005$), hemoglobin level less than 94 g/l (OR — 7.6 95% CI: 1.6–36.5, $p = 0.01$).

Reliable predictors of colectomy determined in the univariate analysis were included in the multivariate analysis, and logistic regression was performed. It is important to note that the logistic regression formula is compiled separately for predictors of colectomy at admission, on the 3rd and 7th days of the therapy (Table 4).

The multivariate analysis revealed that a reliable independent predictor of colectomy at admission was the level of albumin less than 29 g/l (OR — 8.6 95% CI: 2.5–39.9, $p = 0.002$).

On day 3, independent predictors of colectomy were: the level of C-reactive protein more than 40 mg/l (OR — 9,95% CI: 2.4–46.1, $p = 0.003$) and the Mayo index value is above 7 points (OR — 13.3 95% CI: 3.3–75.7, $p = 0.0009$).

On the 7th day of the therapy, independent predictors of colectomy are the level of C-reactive protein more than 30 mg/l (OR — 8.3, 95% CI: 1.5–68.5, $p = 0.02$), as well as the hemoglobin level less than 94 g/l (OR — 19, 95% CI: 2.4–120.6, $p = 0.01$).

DISCUSSION

This is the first Russian observational study of outcomes of treatment in patients with acute severe attack of UC. Since the isolation of “extremely severe attack” of UC in 2017, the rate of colectomy was determined for the first time for this group of patients — 68%, which is significantly more than described in the literature. In recent years, the incidence of colectomy in patients with severe UC attack in different studies varies from 10% to

46% [1,8,9,10]. This range of colectomy rate in the papers is mainly due to the heterogeneity of patients in terms of severity of the disease, history of drug therapy. Traditionally, all authors single out severe UC attack based on the Truelove &Witts criteria.

It is worth noting that according to the Russian clinical guidelines for the treatment and diagnosis of UC, "acute severe" attack is an extreme degree of severity, significantly exceeding the Truelove & Witts criteria [6]. However, in our opinion, such a classification does not allow predicting the outcomes in severe group of patients and, consequently, has no practical significance. In this regard, a combination of traditional the Truelove & Witts criteria with predictors of colectomy could solve the problem of stratification of a group of high-risk patients at the time of initiation of steroid therapy.

The study by Grant, R.C., et al. presents the ACE scale (albumin, C-reactive protein, endoscopy) as a way to objectify the selection of a group of patients at high risk of drug therapy inefficiency. As a result of the analysis, it was shown that with the ACE scale value of 3 points (albumin less than 30 g/l, C-reactive protein more than 50 mg/l and pronounced endoscopic activity), even without taking into account the Truelove & Witts criteria, the incidence of the absence of the effect of steroid therapy is significantly higher and amounted to 78%, compared with 47% ($p > 0.001$) under the traditional classification [9].

The study included patients exclusively with an "extremely severe" UC attack, established on the basis of the Truelove & Witts criteria in combination with an endoscopic picture of extensive ulcerative defects with the formation of mucosal layer "islands" and metabolic disorders. This is due to a significant difference in the rate of colectomy compared with the literature data, and a high incidence of acute intestinal complications of UC during therapy was recorded — 10% and total mortality — 3%.

The most discussed predictor of colectomy today is the level of albumin. It is known that the concentration of serum albumin decreases under the action of pro-inflammatory cytokines, which probably explains the development of adverse outcomes in severe UC attack and, accordingly, allows them to be predicted. So, in a study by a group of authors from Japan — Tanaka M., et al., the albumin level of less than 24.5 g/l was an independent predictor of colectomy (OR = 6.1, 95% CI: 1.83–20.3). Particular interest in the level of albumin is also due to the possibility of predicting the effectiveness of "rescue therapy" with the use of anti-TNF inhibitors. In the experiments by Kevans D., et al., it was demonstrated that a low serum albumin level leads to an acceleration of the clearance of infliximab and shortens the half-life of the drug from the blood, which causes the absence or loss of the effectiveness of the treatment [12]. Given the above, it becomes clear why the level of albumin is a significant predictor in predicting outcomes in patients with severe or acute severe UC attack.

In addition to the albumin level, our study revealed predictors of colectomy on the 3rd and 7th days of steroid therapy. On the 3rd day of prednisolone treatment, reliable predictors were the value of the Mayo index above 7 points and the level of C-reactive protein over 40 mg/l. These factors are of key importance in assessing the effectiveness of steroid therapy, on the basis of which a decision can be made to continue or discontinue drug treatment. Previous prospective studies have demonstrated that an increase in C-reactive protein on the 3rd day of steroid therapy is the most important independent predictor of colectomy in patients with severe UC [13]. The value of the Mayo index above 7 points corresponds to the fact of the lack of effectiveness of the therapy, which has also been repeatedly demonstrated earlier in various studies. In particular, the "Swedish Index" was previously presented, which is essentially a combination of the absence of a clinical response and a high level of C-reactive protein. Our results clearly demonstrate the need for stratification of patients with severe UC attack at the time of initiation of drug therapy. In our opinion, the allocation of a "acute severe attack" is advisable based on a combination of traditional criteria with an endoscopic picture and albumin level. The evidence value of the results obtained is certainly limited by its design. In order to obtain more convincing and highly evidence-based results, further work on this problem is necessary with the conduct of a cohort prospective study.

CONCLUSION

In the group of patients at high risk of adverse outcomes of "extremely severe" UC attack, the rate of colectomy was 68%, the incidence of acute intestinal complications reached 10%, and the overall mortality was much higher than in the population of patients with UC, and amounted to 3% when treated in a specialized institution. A reliable predictor of colectomy, which allows predicting outcomes before starting conservative treatment, is the level of albumin less than 29 g/l at admission to the clinic.

Reliable factors for evaluating the effectiveness of the therapy and predicting its prognosis are the level of C-reactive protein more than 40 mg/l and the value of the Mayo index above 7 points on the 3d day of the therapy, as well as the level of C-reactive protein above 30 mg/l on the 7th day.

AUTHORS CONTRIBUTION

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