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Clinical manifestations and quality of life in patients with different types of idiopathic megabowel

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ABSTRACT *AIM: to compare the clinical and diagnostic features and quality of life in patients with different types of idiopathic megabowel.*

PATIENTS AND METHODS: 157 patients with idiopathic megacolon/megarectum, confirmed by barium enema, were divided on 3 groups: 1) distal idiopathic megabowel (megarectum ± distal third of sigmoid colon dilatation); 2) idiopathic megacolon (variable extent of colon dilatation with a normal size rectum); 3) idiopathic megabowel (megarectum ± variable extent of colon dilatation). Hirschsprung's disease was excluded in all patients based on complex of clinical features, barium enema and anorectal manometry results and (if needed) rectal Swenson's biopsy.

RESULTS: the cohort included 70 (44.6%) patients with distal idiopathic megabowel, 50 (31.8%) patients with idiopathic megacolon and 37 (23.6%) patients with idiopathic megabowel. Wexner constipation scale rate, rate of integral parameters "abdominal discomfort" and "defecation difficulties", summary assessment of quality of life by IBSQOL questionnaire did not differ between groups ($p > 0.05$). At the same time patients with distal idiopathic megabowel were statistically significant younger ($p < 0.01$), had significant higher rate of faecal incontinence due to faecal impaction overflow ($p < 0.01$), had less often bowel movement. Also these patients had significant higher rate of distal contrast retention ($p < 0.01$) during gut transit test, but their colonic transit time was slight faster ($p = 0.04$).In multivariate analysis both megarectum (OR = 25.42; 95% CI 5.01–128.92) and insufficiency of anal sphincter (OR = 4.71; 95% CI 1.38–16.14) were independent predictors of faecal incontinence. The surgical treatment was performed most often in idiopathic megacolon group ($p < 0.01$), mainly due to colon volvulus. The most patients with distal idiopathic megabowel (97.1%) were successfully maintained with a conservative treatment.

CONCLUSION: there was not substantial difference in clinical features and quality of life in patients with different types of idiopathic megabowel, except of significant higher rate of faecal incontinence and less often bowel movement in distal idiopathic megabowel group. Faecal incontinence in these patients is linked disturbance rather intestinal, than anal component of continence. The necessity in surgical treatment was rising most often in cases of idiopathic megacolon. The conservative treatment was quite effective in most patients with distal idiopathic megabowel.

KEYWORDS: *idiopathic megacolon, idiopathic megarectum, idiopathic megabowel, quality of life, barium enema*

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INTRODUCTION

Idiopathic megabowel/megarectum is usually understood as chronic dilatation of the entire large intestine or any part of it, developing for unknown reasons. The term 'idiopathic' just emphasizes the uncertainty of the etiological factor. Accordingly, the diagnosis is established by excluding all known causes, primarily Hirschsprung's disease, anorectal malformations and extra-intestinal etiology associated with endocrinological, neuropsychiatric disorders and connective tissue diseases. The entire large intestine, as well as one or more of its parts, can be pathologically dilatated.

In English-language literature, 3 types of megabowels are usually described:

1. Idiopathic megabowel — dilatation of the colon or its section;
2. Idiopathic megarectum — rectal dilatation;
3. Idiopathic megabowel/megarectum is a dilatation of the entire large intestine, that is, a combination of megabowel with megarectum [1,2].

The dilatation of the colon itself can also be of various lengths and site. According to the Russian clinical guidelines for the diagnosis and treatment of idiopathic megabowel, approved in 2021, the following types of megabowels are distinguished by length:

1. Megasigma — dilatation of the sigmoid colon;
2. Left — sided megabowel — dilatation of the sigmoid and descending colon;
3. Subtotal megabowel — spreading of the lesion to the hepatic flexure;
4. Total megabowel — dilatation of the entire colon and caecum [3].

However, in our clinical practice, there have been patients with an isolated megatransversum or with localization of megabowels in the area of the splenic flexure. Earlier, we tried to characterize the clinical picture of idiopathic megabowel and its relationship with the results of objective diagnostic methods, as well as patients' assessment of quality of life [4,5]. However, it is logical to assume that different types of megabowel can manifest themselves in different ways and have a different impact on the quality of life of patients. Therefore, the purpose of this analysis was to compare the severity of clinical symptoms, quality of life and diagnostic test results in patients with different types of megabowel.

PATIENTS AND METHODS

The retrospective cohort single-center study included 157 patients with idiopathic megabowel/megarectum who were under control from 2002 to 2023. The presence of megabowel/megarectum in all cases was confirmed by barium enema on the cleansed bowel (irrigoscopy) in accordance with Russian clinical guidelines for the treatment of idiopathic megabowel [3]. Hirschsprung's disease was excluded in all patients based on the combination of the by clinical data, irrigoscopy and anorectal manometry. In doubtful cases (n = 24), in the presence of contradictions in these tests, a full-layer Swenson's biopsy of the rectal wall was performed using a modified technique [6] and the preservation of the ganglia of the intermuscular and submucosal plexuses was confirmed by morphology.

Based on the results of irrigoscopy, the patients were divided into 3 subgroups. The first group included patients with distal large intestine dilatation, which meant megarectum or megarectum in combination with distal third sigmoid colon dilatation. The second subgroup (isolated megabowel) consisted of patients who had colon dilatation of various localization and extent with a normal size of the rectum. The third subgroup included those patients in whom megarectum was combined with megabowel. The comparison of clinical symptoms was carried out both by binary features of the presence or absence of symptoms and history data, and by quantitative features of the severity of symptoms on a point scale, which were evaluated using a special questionnaire in 121 patients. In this way, the severity of the indicators 'abdominal discomfort' and 'defecation difficulties' was calculated, as well as the time of the disease and the preservation of the urge to defecate, the frequency of independent stools and the frequency of defecation, provided that enemas and laxatives were not used, the severity of constipation according to the modified Wexner's scale. The calculation method was described in more detail earlier [4]. A comparative assessment of the quality of life (QOL) was performed in 93 patients using the IBSQOL questionnaire [7]. The analysis took into account the aggregated assessment, as well as the impact of megabowel on the emotional sphere, mental health, sleep, general tone, physical activity, nutrition, social activity, ability to perform basic activities and sexual relations on a point scale.

A study of transit through the gastrointestinal tract (GIT) was performed in 95 patients. At the same time, the total transit time (TTT) was taken into account on a point scale, where TTT was up to 24 hours, 24–48 hours, 49–72 hours, 73–96 hours and more than 96 hours corresponded to 1, 2, 3, 4 and 5 points, as well as the presence or absence of distal delay, that is, predominant contrast delay in the sigmoid and the rectum. The recto-anal inhibitory reflex test, as a way to exclude Hirschsprung's disease, was performed in all patients included in the study. In addition, the functional state of the anal sphincter was assessed in 90 patients. The test was performed on various diagnostic devices and in various ways, including high-resolution anorectal manometry using open stationary perfusion sensors, profilometry (stretching open perfusion sensors), sphincterometry (closed stationary manometric sensors) and total surface electromyography. Thus, comparative analysis was not possible. Therefore, a qualitative assessment was performed on the binary basis of the presence/absence of anal sphincter incontinence according to the conclusion of a pathophysiological study in accordance with previously defined norms for each of the methods [8,9].

It should be noted that due to the retrospective nature of the analysis, defects in filling out questionnaires by patients, as well as the unequal scope of the examination and the technical limitations of the diagnostic tests themselves, the number of observations for each of the compared signs could be different. Therefore, the tables indicate the number of cases in the corresponding lines.

Statistical Analysis

Statistical analysis was performed using the STATISTICA software version 13.3 (TIBCO, USA). Qualitative signs were described by absolute and relative rates. Quantitative variables were represented by medians (Me) and 1st and 3rd quartiles (Q1; Q3). The comparison of subgroups by binary features was performed using Pearson's criterion c^2. In the case of statistically significant differences, a pairwise comparison of subgroups was performed using the two-way accurate Fisher's exact test with the Benjamin-Hochberg's correction. Differences in quantitative characteristics were assessed using the analysis of variance of the Kraskel-Wallis H-test, with pairwise comparison by the Mann–Whitney U-test, also with the Benjamin-Hochberg's correction. The effect of the functional state of the anal sphincter and the presence or absence of megarectum on the rate of fecal incontinence was assessed by the method of multiple logistic regression. The differences were considered as statistically significant at $p < 0.05$.

RESULTS

The distribution of patients by megabowel types was as follows: the majority of patients with distal large intestine dilatation (1st subgroup) were 70 (44.6%) cases. Isolated megabowel with normal rectal size (subgroup 2) occurred in 50 (31.8%) cases. At the same time, the majority of patients — 38 (76.0%) out of 50 — were diagnosed with megasigma. In the remaining 12 (24.0%) cases, an isolated megatransversum was detected in 6 patients, in 1 patient — a combination of it with a dilatation of the right colon, in 1 more — a dilatation of only the ascending colon and caecum. In 4 cases, there was a subtotal (up to the hepatic flexure) or total megabowel. Finally, the combination of megarectum with megabowel (3rd subgroup) was found in 37 (23.6%) patients. Of these, three, in addition to the expansion of the sigmoid colon, revealed an expansion of the proximal sections — subtotal megacolon in two and total in one patient. There were no significant differences in gender between the subgroups of patients. The frequency of complaints of constipation and lack of independent stools was also very close. Statistically significant differences were noted in the frequency of complaints of fecal incontinence and the detection of distal contrast delay in the study of transit through the gastrointestinal tract ($p < 0.0001$ for both features). Thus, fecal incontinence most often bothered patients with distal large intestine dilatation, less

Table 1. *Comparison of subgroups by binary features (Pearson's criterion (χ2), with pairwise comparison — two-sided exact Fisher criterion)*

Feature		Megabowel type			*p*
		Distal ***n*** **/ N (%) (1)**	**Megabowel** ***n*** **/ N (%) (2)**	**Megarectum + megabowel** ***n*** **/ N (%) (3)**	
Gender	Male	46/70 (65.7)	22/50 (44.0)	21/37 (56.8)	0.0608
	Female	24/70 (34.3)	28/50 (56.0)	16/37 (43.2)	
Complaints of constipation		61/67 (91.0)	41/49 (83.7)	31/35 (88.6)	0.4783
Independent stool preserved		53/61 (86.9)	39/46 (84.8)	25/33 (75.8)	0.3670
Complaints of fecal incontinence		**47/68 (69.1)**	**5/50 (10.0)**	**10/34 (29.4)**	**< 0.0001** p_{1-2} **< 0.0001** p_{1-3} **= 0.0004** p_{2-3} **= 0.040**
Distal delay (transit test)		**18/25 (72.0)**	**1/35 (2.9)**	**6/18 (33.3)**	**< 0.0001** p_{1-2} **< 0.0001** p_{1-3} **= 0.016** p_{2-3} **= 0.0066**
Anal sphincter in continence		16/39 (41.0)	7/28 (25.0)	4/23 (17.4)	0.1146
History of volvulus		**4/70 (5.7)**	**28/46 (60.9)**	**12/32 (37.5)**	**< 0.0001** p_{1-2} **< 0.0001** p_{1-3} **= 0.0002**
Surgical treatment		**2/69 (2.9)**	**36/49 (73.5)**	**18/37 (48.6)**	**< 0.0001** p_{1-2} **< 0.0001** p_{1-3} **< 0.0001** p_{2-3} **= 0.025**

Table 2. *The relationship of fecal incontinence with the presence of megarectum and the anal sphincter incontinence (two-side Fisher's exact test)*

Feature		Fecal incontinence		*p*
		Yes (*n* (%))	**No (*n* (%))**	
Megarectum	Yes	57 (55.9)	45 (44.1)	**< 0.0001**
	No	5 (10.0)	45 (90.0)	
	Total	62 (40.8)	90 (59.2)	
Anal sphincter in continence	Yes	17 (65.4)	9 (34.6)	**0.0177**
	No	22 (35.5)	40 (64.5)	
	Total	39 (44.3)	49 (55.7)	

often — when combining megarectum with megabowel, and even less often — in patients with isolated megabowel. The differences were significant for all pairwise comparisons. A similar pattern was observed with respect to distal contrast delay: its frequency in the 1st subgroup was statistically significantly higher than in the 2nd and than in the 3rd. And in the 3rd subgroup — more than in the 2nd. The need for surgical treatment most often arose in patients with isolated megabowel, mainly due to the sigmoid colon volvulus. On the contrary, the vast majority of patients with distal-only dilatation responded satisfactorily to conservative treatment (Table 1).

To clarify the mechanism of fecal incontinence, an assessment of its relationship with the presence of megarectum and the functional state of the anal sphincter was carried out. According to the analysis of the conjugacy tables, the detection rate of fecal incontinence was significantly higher in the presence of both megarectum and anal sphincter incontinence (Table 2).

In multivariate analysis by the method of multiple logistic regression, the presence of megarectum and/or incontinence of the anal sphincter were significant independent predictors of the occurrence of fecal incontinence. The odds ratio for megarectum was 25.42 (95% CI: 5.01–128.92),

Table 3. *The effect of the presence of megarectum and the functional state of the anal sphincter on the detection rate of fecal incontinence (multiple logistic regression)*

Feature	OR	95% Coincidence Interval		*p*
		Lower margin	Upper margin	
Megarectum	**25.42**	5.01	128.92	**< 0.0001**
Anal sphincter in continence	**4.71**	1.38	16.14	**0.0136**

for sphincter incontinence — 4.71 (95%CI: 1.38–16.14) (Table 3). It should also be noted that operations on the perineum and anal canal in the past were performed in 5 (3.2%) of 157 patients, none of whom complained of fecal incontinence, and manometric features of anal sphincter incontinence were detected in only one.

When comparing the severity of those features and symptoms that could be assessed on a point scale, quality of life indicators in patients with different types of megabowel/megarectum using the Kruskal-Wallis H-test of variance analysis, significant differences were found in age, defecation rate (provided that laxatives and enemas are not used) and the ability to perform basic activities. A significant difference was also noted in the degree of severity of transit difficulties according to the passage of barium suspension in the gastrointestinal tract. At the same time, no significant differences were found in the magnitude of the integral indicators 'abdominal discomfort' and 'defecation difficulties', as well as the intensity of constipation on the Wexner's scale and the overall assessment of quality of life. According to a pairwise comparison of subgroups using the Mann-Whitney U-test, patients with distal large intestine dilatation alone were significantly younger than patients with both isolated megabowel and in the case of a combination of megabowel and megarectum. The defecation rate, provided that laxatives and enemas were not used, was also significantly lower than in patients with megabowel. The assessment of the ability to perform basic work (business, education, household) by patients with a combination of megabowel and megarectum was significantly lower than in the subgroup of patients with isolated megabowel. It was not possible to confirm the difference in the degree of transit difficulties by pairwise analysis (Table 4).

Additionally, a comparative analysis of the values of the integral indicators 'abdominal discomfort', 'defecation difficulties' and the intensity of constipation on the Wexner's scale, as well as the degree of preservation of urge to defecate, depending on the presence or absence of megabowel and megarectum, was carried out. In the first case, for this purpose, the 1st subgroup was compared with the combined 2nd and 3rd ones (Table 5), in the second case — the 2nd subgroup was compared with the combined 1st and 3rd ones (Table 6). The presence of megabowel was significantly associated with a lower severity of bowel movement difficulties and constipation on the Wexner's scale ($p = 0.03$ and $p = 0.02$, respectively). There were no significant differences in these clinical parameters in patients with and without megarectum (Table 6).

DISCUSSION

The present analysis largely confirmed the results of the classic work by Gattuso, J.M. and Kamm, M.A. (1997), which described the features of clinical symptoms and tests results for patients with idiopathic megabowel and megarectum [10]. In dividing patients into subgroups, we relied on the methodology described in this publication. It should be noted, however, that the above-mentioned authors, singling out a group of patients with idiopathic megarectum, attributed to it those who demonstrated dilatation of the rectum and 'various degrees of sigmoid colon', without specifying the extent of the dilatation. Thus, patients of the 1st and most of the 3rd subgroups in the study belong to this type. In many ways, the approach of Gattuso J.M. and Kamm M.A. is determined by the method of diagnosis. On the one hand, in the retrospective, more representative

Table 4. *Clinical symptoms and assessment of quality of life in various types of megabowel (Kruskal-Wallis H-test, pairwise comparison — Mann-Whitney U-test)*

Feature		Megabowel type						*p*
		Distal (1)		Megabowel (2)		Megarectum + Megabowel(3)		
		n	Me (Q1;Q3)	*n*	Me (Q1;Q3)	*n*	Me (Q1;Q3)	
Age (years)		**70**	**18.0 (17.0; 22.0)**	**50**	**36.5 (28.0; 51.0)**	**37**	**30.0 (22.0; 46.0)**	**< 0.0001 p_{1-2} < 0.0001 p_{1-3} < 0.0001**
Independent stool (points)		56	2.0 (1.0; 5.0)	36	3.0 (1.0; 4.0)	28	2.0 (1.0; 4.0)	0.2760
Defecation rate (points)		**55**	**3.0 (2.0; 3.0)**	**40**	**4.0 (2.5; 5.0)**	**26**	**4.0 (2.0; 5.0)**	**0.0152 p_{1-2} = 0.024**
Urge to defecate (points)		53	2.0 (1.0; 4.0)	33	2.0 (1.0; 3.0)	24	2.0 (1.0; 2.0)	0.6263
'Abdominal discomfort' (points)		42	11.5 (7.0; 15.0)	33	11.0 (8.0; 14.0)	25	11.0 (7.0; 15.0)	0.9833
'Defecation difficulties' (points)		43	9.0 (6.0; 12.0)	33	7.0 (4.0; 10.0)	22	6.0 (5.0; 10.0)	0.1001
Anamnesis duration (points)		63	4.0 (3.0; 4.0)	47	4.0 (2.0; 5.0)	31	4.0 (2.0; 5.0)	0.7897
Constipation intensity (Wexner's scale)		43	14.0 (10.0; 17.0)	33	10.0 (7.0; 15.0)	22	12.5 (9.0; 15.0)	0.0703
IBSQOL	Emotional sphere	41	68.8 (56.3; 75.0)	28	75.0 (53.1; 87.5)	22	59.4 (37.5; 81.3)	0.2779
	Mental health	40	75.0 (60.0; 85.0)	29	70.0 (60.0; 85.0)	22	70.0 (55.0; 75.0)	0.2509
	Sleep	41	75.0 (66.7; 83.3)	29	75.0 (58.3; 91.7)	23	66.7 (50.0; 75.0)	0.0512
	Tone	39	50.0 (37.5; 62.5)	29	50.0 (50.0; 75.0)	23	50.0 (25.0; 62.5)	0.4359
	Physical activity	37	75.0 (58.3; 83.3)	26	75.0 (58.3; 100.0)	21	66.7 (50.0; 83.3)	0.2865
	Nutrition	40	60,0 (53.3; 73.3)	29	60.0 (53.3; 66.7)	23	60.0 (46.7; 66.7)	0.6087
	Social activity	40	53.1 (31.3; 75.0)	28	68.8 (46.9; 90.6)	23	56.3 (33.1; 68.8)	0.1932
	Basic activity	**39**	**43.8 (25.0; 75.0)**	**26**	**65.6[4] (31.3; 75.0)**	**22**	**46.9[4] (0.0; 62.5)**	**0.0456 p_{2-3} = 0.028**
	Sexual relations	22	66.7 (26.7; 80.0)	16	70.0 (46.7; 80.0)	10	63.3 (53.3; 73.3)	0.9039
	Aggregated assessment	40	57.5 (49.9; 76.4)	29	67.7 (53.5; 81.3)	23	57.9 (44.6; 67.6)	0.1720
Transit through GIT (points)		**35**	**5.0 (3.0; 5.0)**	**39**	**5.0 (5.0; 5.0)**	**21**	**5.0 (5.0; 5.0)**	**0.0366**

Table 5. *Severity of clinical manifestations depending on the presence or absence of megabowel (Mann-Whitney's test)*

Feature	Megabowel				*p*
	Present (2nd + 3rd subgroups)		Absent (1st subgroup)		
	n	Me (Q1;Q3)	*n*	Me (Q1;Q3)	
Urge to defecate (points)	57	2.0 (1.0; 2.0)	53	2.0 (1.0; 4.0)	0.4634
'Abdominal discomfort' (points)	58	11.0 (7.0; 15.0)	42	11.5 (7.0; 15.0)	0.9695
'Defecation difficulties' (points)	**55**	**7.0 (4.0; 10.0)**	**43**	**9.0 (6.0; 12.0)**	**0.0349**
Constipation intensity (Wexner's scale)	**55**	**11.0 (8.0; 15.0)**	**43**	**14.0 (10.0; 17.0)**	**0.0223**

Table 6. *Severity of clinical manifestations depending on the presence or absence of megarectum (Mann-Whitney'sU-test)*

Feature	Megarectum				*p*
	Present (1st + 3rd subgroups)		Absent (2nd subgroup)		
	n	Me (Q1;Q3)	*n*	Me (Q1;Q3)	
Urge to defecate (points)	77	2.0 (1.0; 3.0)	33	2.0 (1.0; 3.0)	0.9845
'Abdominal discomfort' (points)	67	11.0 (7.0; 15.0)	33	(11.0 (8.0; 14.0)	0.9071
'Defecation difficulties' (points)	65	8.0 (5.0; 11.0)	33	7.0 (4.0; 10.0)	0.2977
Constipation intensity (Wexner's scale)	65	13.0 (10.0; 17.0)	33	10.0 (7.0; 15.0)	0.0923

part of the work, the presence of megabowel was confirmed by the results of irrigoscopy and intraoperative revision, as well as its prevalence in the proximal direction. On the other hand, in the prospective group, the megabowel criterion was a gut width of more than 6.5 cm on a lateral irrigogram performed using water-soluble contrast without preliminary preparation of the intestine, along a line drawn perpendicular from the 2nd sacral vertebra. This method was proposed by Preston D.M., Lennard-Jones J.E., and Thomas B.M. in 1985, although they used it under conditions of standard double contrast with barium suspension [11]. With all the advantages in terms of simplicity and radiation load, the disadvantages of the technique are the inability to estimate the length of the megabowel in the proximal direction, as well as the risk of missing an isolated dilatation of the proximal colon without a megasigma. In particular, there were 8 patients in our group with isolated megatransversum or a combination of it with dilatation of the ascending colon and caecum. In the prospective part of the study, Gattuso J.M. and Kamm M.A. (1997) identify 6 patients with 'sigmoid and proximal colon dilatation', as well as 1 patient with total megabowel and megarectum, but do not specify how they established the degree of involvement of the colon. Actually, due to the small number of patients with isolated megabowel, and also assuming that it is the presence or absence of megarectum that determines the clinical isolation of subgroups, the authors further compare 2 types of megabowel: megarectum with or without colon dilatation and megabowel with normal rectal size. Having a larger sample of patients, we considered it justified to divide them into 3 subgroups for comparative analysis: those with a dilatation of only the distal large intestine (1), a dilatation of only the colon (2) and a combination of both (3). This approach seems justified to us from the point of view of choosing surgical tactics in the future. At the same time, in determining the size of the intestine, we relied on the results of irrigoscopy performed after preparation with laxatives and/or enemas. According to a 2018 systematic review, most researchers also use irrigoscopy to confirm megabowel [12]. CT-colography, having potential advantages in terms of standardization of the methodology and accuracy of estimating the length and width of the intestine, has not yet been widely used [13,14]. In addition, irrigoscopy is best to exclude Hirschsprung's disease, which is a necessary condition for the diagnosis of idiopathic megabowel [3].

In a comparative analysis, we did not find significant gender differences. The number of men and women in the subgroups was approximately the same, except for some predominance of the former in distal large intestine dilatation. Gattuso J.M. and Kamm M.A. also noted a high rate of megarectum in men [10]. Patients with distal large intestine dilatation alone were significantly younger than patients with both isolated megabowel and a combination of megabowel and megarectum. And this also coincides with the findings of other authors [10,15].

Surprisingly, we found almost no significant differences in clinical symptoms in patients with different types of megabowel. Most patients complained of constipation and their frequency in all groups, as well as the magnitude of the integral indicators 'abdominal discomfort' and 'defecation difficulties', as well as the intensity of constipation on the Wexner's scale were very close. By and

large, the only symptom in which the subgroups statistically significantly differed from each other was fecal incontinence — it was most often observed in patients with distal large intestine dilatation, significantly less often in patients with a combination of megabowel and megarectum, and even less often in patients having isolated megabowel.

Perhaps this is due to a statistically significantly worse assessment of the ability to perform basic job by patients of the 1st subgroup, although this did not affect the overall assessment of quality of life, in which we could not identify significant differences.

Complaints of fecal incontinence were significantly associated with the presence of megarectum. It should be noted that fecal incontinence was also correlated with the functional state of the anal sphincter — the sphincter incontinence rate according to anorectal manometry was significantly higher in patients with complaints of malaise ($p = 0.02$). Similar data were obtained by Gattuso J.M. and Kamm M.A. (1997): fecal incontinence was a characteristic feature of megarectum. At the same time, in the prospective part of their study, it was shown that the mean resting pressure in the anal canal in patients with idiopathic megarectum was significantly lower than in patients with megabowel and healthy volunteers [10]. The authors note that the reason for this may be lesion of the anal sphincter, in particular, during manual emptying of the rectum under anesthesia, as well as the inhibitory effect on the internal sphincter of constant filling of the rectum with feces or a muscular anomaly of the internal sphincter itself. In the study, with multivariate logistic regression analysis, both megarectum and anal sphincter incontinence were independent statistically significant predictors of fecal incontinence. But at the same time, the odds ratio (OR) for megarectum was 25.4, more than 5 times higher than the same indicator for anal incontinence (4, 7). In our opinion, this confirms the conditionality of fecal incontinence in these patients to a greater extent by a disorder of the intestinal component of retention than the anal one. Accordingly, it is hoped that improving the reservoir function of the rectum in one way or another, including surgically, can lead to the relief of fecal incontinence, or at least a decrease in its severity. Moreover, we did not find any correlation between anal sphincter incontinence among patients who had previously undergone anal canal and perineal procedures.

Another feature that distinguished patients with isolated megarectum (subgroup 1) was a significantly higher rate of distal contrast delay in the barium suspension transit time through the gastrointestinal tract. However, the total transit time in this group was slightly less than in the other two, although this could not be confirmed by pair wise comparison. In previous paper, when analyzing the relationship between the clinical picture of idiopathic megabowel and megarectum with the results of diagnostic tests, we found a significant, but contrary to common sense, inverse correlation between the severity of symptoms of defecation difficulties and the size of the sigmoid colon [5]. It has been suggested that this dependence could be due to the presence in some patients of a megarectum with a normal size of the sigmoid colon or a megasigma and a non-dilated rectum. Thus, evacuation difficulties caused by megarectum could be the cause of defecation difficulties in patients with a smaller sigmoid colon. And, on the contrary, the normal function of the rectum in megasigma is to cause a lower severity of defecation difficulties and the preservation of the urge to defecate. This assumption has not been confirmed in the present analysis. Indeed, patients with dilatation of only the distal large intestine (subgroup 1) were characterized by a significantly lower defecation rate, if additional means of stimulating emptying were not used, compared with patients having isolated megabowel (subgroup 2). However, it is unlikely that this indicator should be considered a reflection of the actual evacuation difficulties. At the same time, we did not find significant differences in the value of the integral indicator ‘defecation difficulties and the degree of preservation of urge to defecate in patients with different types of

megabowel. Moreover, the presence or absence of megarectum (comparison of the 2nd and combined 1st and 3rd subgroups) did not affect these parameters (p = 0.98 and p = 0.30, respectively). Another unexpected finding noted in a previous publication, namely, the inverse correlation of the width of the sigmoid colon with the value of the indicator 'abdominal discomfort' and the intensity of constipation on the Wexner's scale, also did not find its explanation. In both parameters, the subgroups did not differ from each other. But at the same time, in patients with megabowel (combined 2nd and 3rd subgroups), the severity of constipation on the Wexner's scale was significantly less than without it, that is, in the presence of distal dilatation only (p = 0.02). Thus, the revealed dependencies are probably not a reflection of a biological pattern, but a consequence of the shortcomings of retrospective analysis and the problem of multiple comparisons.

The need for surgical treatment most often in patients with isolated megabowel. First of all, this was due to volvulus, which occurred significantly more often in this subgroup than in the other two, that is, in the presence of megarectum. On the contrary, in patients with isolated megarectum, in most cases it was possible to achieve relief of symptoms by conservative methods. In this regard, our results differ somewhat from the results of Gattuso J.M. and Kamm M.A., which have been repeatedly mentioned above. (1997) — 7 out of 22 of the prospectively followed patients with idiopathic megarectum, as well as the only patient with total megabowel and megarectum, required surgery. Of the 6 patients with isolated megabowel, 1 was operated due to recurrent volvulus. Generalization of the prospective group with a more numerous retrospective group is not correct in this case, since only operated patients were included in the latter. The difference in the surgery rate is most likely due to the above-described differences in the criteria for distribution by types of megabowel, namely, the inclusion by colleagues in the 'megarectum' group of patients with proximal dilatation, that is, those who in our analysis made up the 3rd subgroup. It should be noted that patients with isolated megabowel were statistically significantly older than patients of both the first and second subgroups. This may be the reason for a systematic error in assessing the causal relationship between the rate of surgical treatment and the type of megabowel. At the same time, the main indication for surgical treatment was sigmoid colon volvulus, and according to our previous work on the assessment of risk factors for volvulus in patients with idiopathic megabowel/megarectum, age was a less significant predictor than the ratio of intestine sizes [16].

CONCLUSION

There were no significant differences in clinical symptoms and quality of life assessment in patients with different types of megabowel, except for a higher rate of fecal incontinence and rarer defecation with distal large intestine dilatation. At the same time, fecal incontinence in these patients is caused to a greater extent by a disorder of the intestinal component of retention than the anal one. The need for surgical treatment most often in patients with an isolated megabowel with a normal rectal size, mainly due to intestinal volvulus. In the vast majority of patients with dilatation of only the distal large intestine, it was possible to achieve satisfactory well-being by conservative methods.

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