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The retrospective analysis of patients with acute intestinal obstruction management results

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ABSTRACT

The results of investigation of 202 patients with acute intestinal obstruction were analyzed in this work. The pathogenetic factors of endogenous intoxication were studied, and new treatment complex against complications was approved which caused to death decrease, in-patient time shortening and improvement of quality of life.

Keywords: acute intestinal obstruction, endogenous intoxication, surgical treatment

1. Introduction

Due last decades the acute intestinal obstruction (AIO) is the most important problem of urgent surgery independently from treatment methods and diagnostics [1, 2]. Mortality from AIO is 20-25% [3]. The etiology of high level of mortality and postoperative complications is important polyvalent homeostasis disturbance in pre- and postoperative period [3]. As result of syndrome of enteral insufficiency, the endogenous intoxication caused of systemic inflammation, abdominal sepsis, septic shock and polyorganic failure [4]. After bowel obstruction the damaging effect of endotoxines is removed and compensative organism reaction considered as single autocatalytic process, which manifested by endotoxicosis [5]. Thus, timely diagnostic of endotoxicosis and improvement of its diagnostic and management are actual.

The purpose of study was investigation of factors which have influence on treatment results and quality of life of the patients with AIO after small intestine resection.

2. Material and Methods.

We analyzed of results of investigation of 232 persons: 202 patients with AIO aged from 30 to 80 years which were hospitalized to Ivano-Frankivsk Central City Hospital in period of 2009-2014. Among patients were 98 (48.5%) males, 104 (51.4%) females, and 30 practically healthy persons. The etiology of AIO were: strangulated hernia - 56 (27.7%) patients, including postoperative hernia - 22 (10.8%) patients; strangulating ileus - 44 (21.7%) patients, adhesive ileus-63 (31.1%) patients, obstructive ileus - 17 (8.4%) patients.

We studied of clinical and biochemical values at preoperative period and at 5-7 days and 12-14 days after operation. Endotoxicosis status was estimated by using of leukocyte intoxication index (LII), index of intoxication (II), medium-mass molecules (MMM), lipids peroxidation indices (LPI): Malondialdehyde (MD), Diene conjugates (DC), and data of metal-enzyme homeostasis.

Statistical analysis of the results was performed using mathematical program-complex for computer based on Microsoft Windows 1985-2005, as well as programs for statistical analysis *Analys + Soft*, 2007. Verification of the distribution of samples for normality was performed using criterion Shapiro-Wilk. To test the hypothesis of equality of averages using Student's t-test, Fisher normally distributed samples and criteria Wilcoxon-Mann-Whitney for samples whose distribution is different from the normal.

All patients were divided into 2 groups: basic – 102 patients and control – 100 patients. With the aim to correct of metabolic disorders in the basic group patients we used of Reamberin ("POLISAN") solution 400-800 ml (depending on severity), 2 times a day, i/v with the speed of 90 dr /min. prior to surgery and during the first 5 days of the postoperative period. In postoperative period we used of nasointestinal intubation of small intestine with followed intestinal lavage, by 400 ml 0.9% NaCl solution 4-6 times a day during 2-3 days.

3. Results and Discussion: The general pattern of clinical course of AIO in all patients was depended from the degree of enterergia of bring part of the small intestine on the background of

intensification of endotoxemia.

We observed of significant pattern of the postoperative mortality of patients depends of age and comorbidities. In the age structure were dominated patients older than 55 years - 64.6%. Lowest mortality was observed at the age of 50 years - 5.1%, the maximum mortality was observed in the age group over 75 years - 29.6%. In the study mentioned the duration of the postoperative period, a violation of the intestinal passage last 12 - 24 hours was noted and 29.2% of patients who were operated on during the first day mortality rate is 1,8-11,97. Disturbance lasting 36-48 hours was observed in 49.8% of patients with postoperative mortality 15,8-19,6%. In 20 patients operated after 72 hours of admission was noted maximum lethality 28, 9-32,2%.

Considered that dilated bring part of the small intestine is one of the sources of endotoxiation and its functional state, due to violation of the morphological structure and microcirculation and severe hypoxia in the wall of the small intestine, directly affect on the results of a comprehensive surgical treatment because the amount of viable proximal resection was determined, based on previously conducted experimental studies on animals (Skrypko V.D., 2012), by deducting from the total amount of resection length pathologically altered areas depending on the time of the preoperative period, adding 10 cm to resected unsustainable proximal part of intestine. Thus, at intestinal passage disturbance during 12-24 hours preoperative period duration preserve the viability drive small intestine kept at a distance of 40-50 cm; locus in guts duration of 36-48 hours was 60-70 cm and after 72 hours - at a distance of 80 cm drive small intestine. In this case the breach of anastomosis was not observed.

We analyzed the amount of viable proximal small intestine in surviving and deceased patients. In the group of surviving patients the resection volume of viable proximal colon was significantly higher than in deceased patients: 0.80 m and 0.48 m, respectively (Mann-Whitney U test $p = 0,0002$).

We analyzed of the volume of a viable resection of the proximal small intestine with sufficient nor adequate anastomosis. In patients with sufficient volume resection anastomosis viable proximal small intestine was significantly higher -0.80 m compared patients with insufficient anastomosis -0, 40 m (Mann-Whitney U test $p = 0,0001$).

Based on the analysis of our results, we observed that the growth of enterergia in bring part of small intestine in patients with AIO within a short time greatly increases the content of highly toxic substances in several forms: fermentation and decay, destruction of tissue ulcers, intestinal microbial poisons and endotoxins. In conditions of severe hypoxia and degradation of cell membranes by activation of free radical oxidation occurs of energy deficiency rise and collapse of a massive modification of proteins with amino acids that form the average molecular weight of the inhibition of antioxidant protection, and serious violations of metal-enzyme homeostasis.

Analysis of dynamics of values of LII, MMM, DC, MA and II, which are objective signs of intoxication level, at the 5 day of postoperative period we observed more low level of intoxication for 0.89 U than in control group (for 0.62 U).

During complex surgical treatment of basic group patients with AIO with additional use of Reamberin we established of more intensive increase of metabolic homeostasis correction

time, hypoxia, energy deficiency and braking of lipids peroxidation products extraproduction. All this is accompanied of clinical status improving. During this, the frequency of postoperative complications decreased for 1.25 times (pyogenic and septic - for 2.35 times). Postoperative mortality in control group was 17.21% (17 patients: 7 males and 10 females); in basic group - 8.92% (9 patients: 3 males and 6 females). Term of hospitalization decreased from 19.6 bed-days (in control group) to 17 ones in basic group.

Analysis of life quality in 26 patients showed not significant intestinal lavage disturbance in patients after resection of 50 cm of small intestine with entero-entero anastomosis due X-ray results.

At the first months after operation the significant delay of food mass in intestine, acceleration of contrast passage thru thicker part of small intestine and deceleration of this passage thru ilical part was observed. The data of macroscopic and biochemical examination of excrements were no differences. After 3 months after partially resection of small intestine this disturbances were normalized. In control group patients we founded of small increase of food residues and protein in excrement: $18.1 \pm 1.85\%$ (norm - $13.0 \pm 1.45\%$), $p < 0, 05$.

More expressed and prolonged disturbance of main functions of digestive tract was established in patients with more resection of small intestine. After 3 months after surgery the speed of emptying practically no had differences compared healthy persons. Later we showed of deceleration of contrast evacuation from stomach with expressed hypermotoric dyskinesia of whole intestine.

During satisfactory compensative processes after 1 year after major enterotomia in some cases we showed of continued delay of contrast not only in stomach, but also in small intestine and colon.

Together with coprologic syndrome, digestive disturbance of small intestine was established in control patients group, which manifested by significant increase of proteins in excrement to $18.1 \pm 1.85\%$ ($p > 0, 05$) compare dry residue and fats to $22.6 \pm 2.8\%$ ($p > 0, 01$). In basic patients group this values were: $13.8 \pm 1.55\%$ (protein) and $16.2 \pm 1.9\%$ (fat). Increase of proteins residue also can be result of soluble protein delivery from intestine wall.

4. Conclusion

1. For patients with AIO survey and life quality the significant influence have: age, term of obstruction development, volume of surgery, system complications and anastomosis quality.
2. Established, that at intestinal obstruction term more 12-24 hours the small intestine resection should be conducted no less than 50 cm of non-viable bring part of intestine. At intestinal obstruction term more 48 hours the small intestine resection should be conducted no less than 60 cm of non-viable bring part of intestine at intestinal obstruction term more 12-24 hours the small intestine resection should be conducted no less than 50 cm of non-viable bring part of intestine. At intestinal obstruction term more 78 hours the small intestine resection should be conducted no less than 80 cm of non-viable bring part of intestine.
3. Additional use of Reamberin caused of energy potential activation in cells, acceleration of intestine

passage and significant decrease of endotoxemia grade.

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