Selection of treatment for patients with acute colonic obstruction of tumor etiology

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Abstract
Background: The aim of the present study was to determine the optimal treatment strategy for patients with acute obturative intestinal obstruction due to colonic cancer.

Patients and Methods: We analyzed the results of examinations and treatments of 46 patients with tumors of the colon complicated by Colonic obstruction (CO) in the Department of Surgery, Tashkent Medical Academy from 2013 to 2018.

Results: Thirty-nine patients (84.7%) at the histological examination had adenocarcinoma of the colon. In 5 (10.9%) cases, the tumor were diagnosed as cricoid cell carcinoma, whereas in 2 (4.4%) patients, the diagnosis was undifferentiated carcinoma. A significantly high proportion of patients (62.9%) at the time of admission to the clinic had a severe stage of CO. All of them underwent X-ray of the abdominal cavity, ultrasound, multi-slice computed tomography; (MSCT) and colonoscopy, and had their laboratory data analyzed. Only 3 (6.6%) cases were diagnosed as CO due to colonic tumor in prehospital stage. The remaining cases were diagnosed as acute colonic obstruction (ACO) which is only acute intestinal obstruction. In the preoperative period, ultrasound examination revealed intestinal impassability without specifying the localization of obstruction in 92% of the cases. The presence of collapsed loops of the small intestine was one sign of colonic obstruction which may progress as “closed intestinal loop”.

Conclusion: X-ray and ultrasound examinations of the abdominal cavity revealed the presence of intestinal obstruction without specifying the localization of obstruction. The extent of surgical intervention should be determined differentially depending on the severity of the intestinal obstruction, peritonitis, the degree of tumor progression, the condition of the patient and accompanying pathology.

Keywords: acute colonic obstruction, treatment

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RESULTS

These 46 patients included 28 (60.87%) men and 18 (39.13%) women from 45 to 78 years of age (average: 62.5 ± 4.7 years). Concomitant diseases included diseases of the cardiovascular system most often (79.5%), namely coronary heart disease (73%) and hypertensive disease (24.7%). In addition, 5 (10.8%) patients suffered from respiratory diseases, and 3 (6.5%) patients had diabetes. In 9 (19.5%) patients, the presence of ≥2 associated diseases was noted. Among the patients with symptoms of decompensation of the functions of vital organs, 7 (15.2%) were taken to hospital, 21 (45.7%) in severe condition, and 18 (39.1%) in a moderately severe condition. The predominant localization of the obturating tumor was the left half of the colon, mostly the sigmoid colon and the rectosigmoid colon. The tumor of the cecum was diagnosed in 3 (6.6%) patients, the ascending colon in 8 (17.5%), the descending colon in 21 (45.7%), and the rectum in 9 (19.5%). Tumor of the transverse colon was noted in only 5 (10.7%) patients (Table 1).

Histological findings of thirty-nine patients (84.7%) was adenocarcinoma of the colon. In 5 (10.9%) cases, the tumor was diagnosed as signet ring cell carcinoma, whereas undifferentiated carcinoma was detected in 2 (4.4%) patients. A significantly high proportion of patients (62.9%) at the time of admission to the clinic had a severe stage of CO. All of them underwent X-ray of the abdominal cavity, ultrasound, multi-slice computed tomography (MSCT), and colonoscopy and had their laboratory data analyzed. Only 3 (6.6%) cases were diagnosed as obstruction of the colon by tumor in prehospital stage, and the remaining cases were diagnosed as acute colonic obstruction (ACO), only acute intestinal obstruction.

At the first examination, we made a diagnosis based on the results of clinical and laboratory studies and findings of X-ray and ultrasound examinations of the abdominal cavity. The majority of patients were hospitalized in the later stages of their disease, and only 7 (15.2%) patients presented to the clinic in the first 24 h after the onset of symptoms of ACO. X-ray examination was performed with a radiographic view of the abdominal cavity. Pathognomonic signs of ACO were horizontal fluid levels and gas accumulation in the intestine in the form of Kloyber bowls, localized in the lateral sections of the abdomen. At earlier stages of colic obstruction, only colon pneumatosis was detected in 21.4% of patients. Based on the clinical and radiological data, the diagnosis of ACO was made in 64.3% of cases. Detailed diagnosis on tumor etiology based on the given rentgenologic data was not always be correct. All patients underwent transabdominal ultrasound examinations with a detailed assessment of the state of parenchymatous organs, presence of metastases in the liver or para-aortic lymph nodes, and invasion into the retroperitoneal space. Ultrasonographic signs of ACO included an increase in the size of the colon with the intraluminal deposition of fluid, thickening of its wall, reduction or absence of peristaltic movements, and the presence of effusion in the abdominal cavity.

In patients with an atypical clinical picture and inconclusive data on primary examination, a dynamic ultrasound examination was utilized for the diagnosis. Preoperative ultrasound examination in revealed intestinal impassability without specifying the localization of obstruction in 92% of the cases. The presence of collapsed loops of the small intestine was understood as one sign of colonic obstruction which progress into “closed intestinal loop”.

Table 1. Patients’ Characteristics

| Total | 46 |
|-------|----|
| Age   | 45–78 (62.5±4.7) years |
| Male : Female | 20 (60.8%) : 18 (39.1%) |
| Concomitant Diseases | Heart disease 33 (73%) |
| | Hypertension 11 (24.7%) |
| | Respiratory Disease 5 (10.8%) |
| | Diabetes 3 (6.5%) |
| | Multiple (≥2 diseases) 9 (19.5%) |
| Histology of colonic tumor | Adenocarcinoma 39 (84.7%) |
| | Signet cell carcinoma 5 (10.9%) |
| | Undifferentiated carcinoma 2 (4.3%) |
| Location of tumor | Cecum 3 (6.6%) |
| | Ascending colon 8 (17.5%) |
| | Transverse colon 5 (10.7%) |
| | Descending–Sigmoid colon 21 (45.7%) |
| | Rectum 9 (19.5%) |
| Admission in hospital | Early (≤24 h from onset of symptoms) 7 (15.2%) |
| | Later (≥24 h from onset of symptoms) 39 (84.8%) |
Discussion

The degree and duration of preoperative preparation should be based on the severity of the patient’s condition; the functional state of the cardiovascular, respiratory and reno-urinary systems; and the nature of the upcoming operation. In almost all cases of ACO, syndromes of endogenous intoxication and hypovolemia were detected, and because of the severity of these patients, intensive therapy was required in intensive care department. In the absence of the effect of the treatment, 49.1% of patients were operated on within the first 6 h after admission, 32.1% at 7–12 h after admission, 13.4% at 13–24 h after admission, and 5.4% over 24 h after admission. Eight patients were indicated for urgent surgery due to perforation of the colon and development of distributed peritonitis.

The main goals of the surgical treatment of patients with ACO were the elimination of acute intestinal obstruction by radical resection of the intestine with a tumor or by colostomy on the proximal sections of the colon or through bypass ileocolonic anastomosis, the correction of homeostasis, and the prevention of postoperative complications. In 28.6% of the cases, minimal surgical procedures including bypass ileocolonic anastomosis, double ileostomy, or colostomy were performed due to distant metastasis in the liver and peritoneal carcinomatosis. When the obstruction of right half of the colon was present, ileostomy was performed in 3.6% of patients and bypass ileocolonic anastomosis in 4.7%. When the tumor was localized in left half, transverse colostomy was performed in 5.6% of patients and sigmoid colostomy in 15.2%. Among the 71.4% of patients who underwent removal of the primary tumor, primary anastomosis was performed in only 17.9% when the tumor was located in right colon after adequate decompression of intestine. In 1.8% of patients with primary tumor of the ascending and distal third sigmoid colon, hemicolecotomy was performed with end-ileostomy. In 0.9% of the cases, subtotal colectomy was performed for cancer of the transverse and descending colon with ischemic necrosis. When the tumor was located in the left half of the colon, 17% of patients underwent left-sided hemicolecotomy with transverse colostomy. In 28.6% of patients with sigmoid colon cancer and 5.4% of the rectosigmoid cancer, the operation is executed according to Hartmann’s operation. In 19.6% of patients with incomplete intestinal decompression, intraoperative lavage of the abdominal cavity was performed with removal of the primary tumor and colostomy. During operation, a double lumen catheter was intubated from the stoma through the proximal part of the colon, followed by lavage and decompression using the catheter, and decompression of small intestine using nasointestinal intubation of another catheter.

It was found that, in 86.7% of patients admitted to the department on more than 48 h after the onset of ACO, the tumor was circular and had grown through all layers of the intestinal wall. In addition, in 61.6% of patients who underwent surgery, the regional lymph nodes were involved. Postoperative complications occurred in 12 (26.1%) patients, while 9 (19.5%) had multiple complications. Wound complications were present in 10 (1.7%) patients, including wound suppuration in 8 patients (14.4%) and, seroma and infiltrate in 4 (8.6%). Intra-abdominal complications occurred in 10.7% of cases, they included leakages of anastomosis and distal stump which developed peritonitis in 4.5%, abdominal abscesses in 1.8%, early adhesive intestinal obstruction in 3.6%, and necrosis and prolapse of the colostomy of the anterior abdominal wall in 0.9%. The average duration of hospital stay in whole patients was 27.6 days, that in uncomplicated patients was 16 days and that with the development of postoperative complications was 33.6 days. Eight (17.4%) patients died during the postoperative period. The causes of death were progressive multiorgan failure in 2 (15.2%) patients, thrombotic complications in 4 (9.2%); myocardial infarction in 3 (6.5%), thromboembolism of the pulmonary artery in 1 (2.2%), hepatic/renal failure in 1 (2.2%), and pneumonia in 1 (2.2%).

Conclusion

X-ray and ultrasound examinations of the abdominal cavity revealed the presence of intestinal obstruction without specifying the localization of obstruction. The extent of surgical intervention should be determined differentially, depending on the severity of the intestinal obstruction, peritonitis, the degree of tumor progression, and the condition of the patient and accompanying pathology.

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CONFLICT OF INTEREST STATEMENT:
None declared.

References
1) Aliev SA. Injury of large intestine in urgent surgery. Khirurgiia (Mosk). 2000. 10: 35–40.
2) Buianov VM, Maskin SS, Doroshev IA. Ultrasonic diagnosis of intestinal obstruction. Vestn Khir Im I I Grek. 1999. 158(4): 109–12.
3) Briskin BS, Smakov GM, Borodin AS, Marchenkov AD. Occlusive ileus in colonic cancer. Khirurgiia (Mosk). 1999. 5: 37–40.
4) Vorobyov GI, Odaryuk TS, Kapuller LI, Sheyggin YA, Kornyak BS. Surgical treatment of benign, myomatous rectal tumors. Dis Colon Rectum. 1992. 35(4): 328–31.
5) Topuzov EG, Mel'nikov RA. Surgical tactics (ceceostomy or artificial anus?) in colonic cancer complicated by acute intestinal ob-
struction. Vestn Khir Im II Grek. 1983. 131(12): 35–7.
6) Maskin SS, Ermolaeva NK. Ultrasonic diagnostics of closed traumas of organs of the abdominal cavity and retroperitoneal space. Vestn Khir Im II Grek. 2007. 166(6): 96–100.
7) Wright EG. Radiation-induced genomic instability in haemopoietic cells: implications for radiation pathology. Radiat Oncol Investig. 1997. 5(3): 115–8.
8) Buechter KJ, Boustany C, Caillouette R, Cohn I Jr. Surgical management of the acutely obstructed colon. A review of 127 cases. Am J Surg. 1988. 156(3 Pt 1): 163–8.
9) Stoianov Kh, Văluiev D, Karashmalukov A, Iuliianov A. The factors determining survivorship in patients with colorectal carcinoma complicated by obstructive ileus of the large intestine. Khirurgiia (Sofia). 1996. 49(2): 17–20.
10) Fujita F, Torashima Y, Kuroki T, Eguchi S. Risk factors and predictive factors for anastomotic leakage after resection for colorectal cancer: reappraisal of the literature. Surg Today. 2014. 44(9): 1595–602.
11) Kimura H, Takahashi K, Futami K, Ikeuchi H, Tatsumi K, Watanabe K, Maeda K, Watadani Y, Nezu R, Kameyama H, Nakao S, Kurachi K, Hotokezaka M, Otsuka K, Watanabe T, Ozawa H. Has there been a widespread use of biologic therapy for ulcerative colitis affected surgical trends? Results of a questionnaire survey of economic institutions in Japan. Surg Today. 2016. 46: 930–8.
12) Araki T, Okita Y, Uchino M, Ikeuxhi H, Sasaki I, Funayama Y, Fukushima K, Futami K, Maeda K, Inai T, Itabashi M, Hase K, Motoya S, Kitan A, Mizushima T, Maeda K, Kobayashi M, Mohri Y, Kusunoki M. Risk factors for patients with ulcerative colitis: a multicenter prospective study. Surg Today. 2014. 44: 1072–8.