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Original article

CURRENT MODE OF TREATMENT IN ACUTE DIVERTICULITIS

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SUMMARY

Purpose: The purpose of our study is to determine whether patients with acute uncomplicated diverticulitis with micro-perforation should really be treated as patients without perforation and to identify differences in recurrence rates, complications and mode of treatment

Material and Methods: A total of 47 patients with a diagnosis of acute diverticulitis were admitted to the hospital for a three-year period from 01.01.2018 to 01.01.2020 in the Department of General, Visceral and Emergency Surgery at UMHATEM "Pirogov".

Of those hospitalized, women were 21 (44.68%), men 26 (55.32%). The age in this retrospective analysis varied from 27 to 81 years (average 51.3 years).

Results: All patients had leukocytosis, abdominal pain, and tenderness. From the group of 47 patients hospitalized with acute diverticulitis, twenty-five (53.19%) were diagnosed with micro-perforation by pneumoperitoneum data from X-ray and CT or free intraperitoneal fluid from ultrasound. The other three (6.38%) were identified intraoperatively (by laparoscopy or laparotomy) based on an indication of peritoneal irritation. The remaining 19 (40.43%) with mild symptoms for conservative management (38.89%) - through physical examination, laboratory data and imaging diagnostic methods (X-ray, ultrasound and CT). Of the 28 operated, 13 patients had laparoscopy performed lavage and drainage, with the remaining 15 (with laparotomy) - had Hartmann's procedure.

Conclusion: Acute diverticulitis with micro-perforation showed no significant differences in the complications and course of antibiotic therapy compared to the group of acute diverticulitis without micro-perforation. Neither group required surgery after one-month discharge. Accordingly, to these outcomes, the mode of treatment should be identical.

Keywords: acute diverticulitis, approach, micro-perforation, conventional surgery, laparoscopy,

INTRODUCTION

Diverticulosis is a disease that occurs in 43% of patients undergoing routine colonoscopy [1].

Also, the diagnosis of acute diverticulitis can be made by history, physical examination, laboratory data (leukocytosis). From the imaging methods, CT is the diagnostic method of choice for acute diverticulitis, with a much greater verification value than X-ray and ultrasound. Using CT, Jacobs et al. [3] found that the diagnosis of acute diverticulitis had a sensitivity of 93-97% and a specificity of almost 100%. The use of a CT has enabled clinicians to identify a subgroup of acute diverticulitis known as micro-perforation. Micro-perforation of the diverticulum often made local collections that appear as small extra-pockets of air, gas bubbles, or contain extravasation [4].

Complicated diverticulitis may require an invasive mode of treatment, such as drainage or colon resection, while uncomplicated diverticulitis is often treated with antibiotics. Patients with micro-perforation are usually treated with a conservative approach similar to uncomplicated diverticulitis. This research was focused on invasive treatment and outcomes.

From world studies data, most cases diagnosed with diverticulitis for the first time are identified as uncomplicated [5].

Not many studies have been focused on the results of patients with acute uncomplicated diverticulitis with micro-perforation.

Laparoscopy has shown benefits in terms of low rates in morbidity and mortality and rapid recovery in many different modes of a surgery over the last 30 years. Nowadays, the role of laparoscopy in colorectal surgery is still widely debated. After the first declaration of laparoscopic colectomy in 1991, its use was proposed for the treatment of diverticular disease in elective or emergency patients. Some surgeons suggested laparoscopy as an appropriate approach to the emergent treatment of patients with complicated diverticular disease.

Some of the studies have shown that laparoscopy has an advantage in safety and effectiveness compared to open surgery in the treatment of patients with sigmoid diverticulitis requiring resection. It was identified that laparoscopic surgical resection does not modify the length of hospital stay compared to open surgery. The operating interval was significantly longer than 60 minutes with laparoscopic intervention. And no significant difference

was registered in rates of postoperative mortality, morbidity, complications, and quality of life. Laparoscopic surgery for colon resection is now widely accepted after several studies and reviews of colorectal cancer patients that have shown a clear advantage in terms of morbidity, mortality and early recovery.

Nowadays, many world hospitals use laparoscopy in cases of elective surgery in acute diverticulitis [6].

Some of the reviews showed convincing data that laparoscopic resection in complicated diverticulitis is secure and attentive and allows a short time recovery in selected patients. But laparoscopic approach should be performed by well-trained and experienced surgeons.

Resuming the results of different approaches to acute diverticulitis, should be considered that a current strategy needs to be decided before the intervention. The first is to choose whether you have to start with a laparoscopic procedure or an open approach. Laparoscopy, in most cases, offers a potential advantage compared to conventional open surgery. There is also the possibility of damage control surgery in case of generalized diverticular peritonitis, a life-threatening condition requiring emergency intervention, with the goal of reducing the colostomy rate with lavage, limited closure of perforation, and second look surgery to restore intestinal continuity in hemodynamically unstable patients.

The purpose of our study is to determine whether patients with acute uncomplicated diverticulitis with micro-perforation should really be treated as patients without perforation and to identify differences in recurrence rates, complications and mode of treatment.

MATERIAL AND METHODS

A total of 47 patients with a diagnosis of acute diverticulitis were admitted to the hospital for a three-year period from 01.01.2018 to 01.01.2020 in the Department of General, Visceral and Emergency Surgery at UMHATEM "Pirogov".

Confirmation of diagnosis was based on history, physical examination, laboratory results, X-ray, ultrasound and CT.

Of those hospitalized, women were 21 (44.68%), men 26 (55.32%).

Table 1. Gender distribution

gender distribution	47 (100%)
women	21 (44.68%)
men	26 (55.32%)

In this study, the parameters - age, gender, clinical symptoms, mode of treatment, morbidity and mortality were analyzed.

The age in this retrospective analysis varied from 27 to 81 years (average 51.3 years).

Patients under 18 years old, as well as having a history of previous colonic resection, Crohn's disease and ulcerative colitis, have been excluded from the study.

A laparoscopic approach was used in selected patients. It was performed only in cases without diffuse peritonitis. Case series and retrospective studies have shown the benefits of this technique in purulent peritonitis because of its low morbidity and mortality.

By this technique, there were no differences in recurrence versus the open surgery approach.

Data from all patients included with acute diverticulitis were carefully systematized, analyzed and summarized.

The results were summarized by tracking the morbidity up to one month after discharge.

RESULTS

All patients had leukocytosis, abdominal pain, and tenderness. From the group of 47 patients hospitalized with acute diverticulitis, twenty-five (53.19%) were diagnosed with micro-perforation by pneumoperitoneum data from X-ray and CT or free intraperitoneal fluid from ultrasound. The other three (6.38%) were identified intraoperatively (by laparoscopy or laparotomy) based on an indication of peritoneal irritation. The remaining 19 (40.43%) with mild symptoms for conservative management (38.89%) - through physical examination, laboratory data and imaging diagnostic methods (X-ray, ultrasound and CT).

Table 2. Diagnostic process

Diagnostic process	47 (100%)
by diagnostic imaging	28 (59.57%)
by surgery	19 (40.43%)

Of the 28 operated, 13 patients had laparoscopy performed lavage and drainage, with the remaining 15 (with laparotomy) - had Hartmann's procedure.

Table 3. Mode of treatment

Mode of treatment	47 (100%)
conventional surgery	13 (27.66%)
laparoscopic surgery	15 (31.91%)
conservative management	19 (40.43%)

A curious data was two of the cases underwent laparoscopy. They had symptoms of acute appendicitis due to anatomical variation of the dolihosigma localized in the right iliac region.

In most cases, the inflammatory process was localized in the colon sigmoideum.

From a conservative management group, 19 patients were treated with antibiotics, anti-inflammatory agents and fluids.

The average hospital stays for conservatively treated and those with drainage was 5.7 days and for others with Hartmann's procedure -8.2 days.

Complications were recorded in the group of conventionally operated patients - five with surgical wound suppuration (managed with VAC-dressing), one with Subileus (treated by conservative management), and another one with a ventral hernia. Morbidity was 53.85%.

The morbidity for laparoscopic group was only 13.33%. Wound suppuration had two of the cases.

Table 4. Total morbidity rate

Total morbidity rate	9 (32.14%)
conventional surgery	7 (53.85%)
aparoscopic surgery	2 (13.33%)

No data on deaths. The mortality rate for all patients was 0%.

DISCUSSION

Different series have been published conclusions about the laparoscopic approach in acute diverticulitis. This mini-invasive surgery has ranged from laparoscopic peritoneal lavage in diffuse peritonitis with a sealed perforation to a variety of surgical procedures, including resection as well as lavage (selected from a larger series of up to 150 patients to match the presenting pathology described herein) and standard resections, laparoscopically performed. The conversion rates were similar in this series as in these reports.

Not so many reviews data existed of septic complications secondary to a pneumoperitoneum and gross purulent infection, and some wound complications occurred in these patients, and the majority of patients had a shorter postoperative length duration period than patients in reported series of open surgery.

When doubt exists regarding tissue findings, conversion to a laparotomy remains a safe course of treatment and could preserve some of the benefits of the minimally invasive approach.

The access of hand-assisted laparoscopic surgery with a sleeve may be useful in the most difficult part of the dissection without sacrificing the demonstrated benefits of the minimally invasive approach [7].

Analyzed data from our study demonstrated that there are no significant differences in morbidity and mortality rates between the groups of conservative treatment and laparoscopic approach with drainage. The duration of the hospital stay was closer, like this of the antibiotic therapy period.

An important conclusion is that no surgery was required in conservatively treated patients and reoperation of undergoing laparoscopy and drainage for 1 month after discharge.

Complications were also minimized, while in the conventional surgery group, morbidity was 50% on average, and the interval for antibiotic treatment and hospital stay was longer than 5 days.

All patients had leukocytosis from the blood tests. This was consistent with other studies, which suggest that leukocytosis is not a specific sign of diverticulitis. Most cases from the patients' group were overweight, similar to the study from Strate et al. Also, sigmoid diverticulitis includes over 90% of the cases, which is closed with the data from other world studies [8].

With more experience in laparoscopic colon surgery, surgeons can use minimally invasive techniques in most cases with complex acute diverticulitis. Patients can be drained and down-staged for later interval resection or, if necessary, approached directly by laparoscopic surgery with minimal morbidity. Added to the benefit of a quicker recovery, the risks of later morbidity, such as incisional hernias in infected incisions, are minimized [9].

CONCLUSION

Acute diverticulitis with micro-perforation showed no significant differences in the complications and course of antibiotic therapy compared to the group of acute diverticulitis without micro-perforation. Neither group required surgery after one-month discharge. Accordingly, to these outcomes, the mode of treatment should be identical.

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