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WSES stage 2b complicated colonic diverticulitis in elderly patients: long-term outcomes of conservative treatment

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Abstract

Managing complicated diverticulitis in the elderly is challenging due to comorbidities and the nature of diverticulitis. The combined World Society of Emergency Surgery (WSES)/Italian Society of Geriatric Surgery (SICG)/Italian Hospital Surgeons Association (ACOI)/Italian Emergency Surgery and Trauma Association (SICUT)/Academy of Emergency Medicine and Care (AcEMC)/Italian Society of Surgical Pathophysiology (SIFIPAC) guidelines for diagnosing and treating acute left colonic diverticulitis in older patients advise against non-operative treatment for stage 2b due to the limited evidence supporting non-operative management.

This retrospective single-center study describes the conservative management and outcomes of 27 elderly patients (17 males) with WSES stage 2b acute colonic diverticulitis (ACD) treated at Parma University Hospital from January 1, 2012, to December 31, 2019.

Patients were divided into two groups according to C-reactive protein (CRP) levels: group 1 (CRP<150 mg/dL; 15 patients); group 2 (CRP≥150 mg/dL; 12 patients). The mean age was 77.8±6.1 years (range 68-92). The average white cell count was 12.6±8.8×10^9/L (range 1.9-50.2) in group 1 and 11.24±7.89 (range 3.5-50.25) in group 2. The mean CRP level in group 1 was 96.8±34.4 mg/dL, and in group 2, it was 195.1±39.9 mg/dL.

All patients were treated with bowel rest and antibiotics. The average length of stay was 8.8±8.9 days for group 1 and 8.0±3.8 days for group 2. Every patient was discharged from the hospital uneventfully. During a follow-up period of 72.1±28.4 months, new episodes of acute diverticulitis were documented in 5 patients (18.5%), with only 1 patient (3.7%) necessitating surgical intervention.

This small series on stage 2b diverticulitis in the elderly shows that, in selected cases, conservative treatment can be a safe and effective treatment, avoiding unnecessary surgery that leads to higher morbidities.

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Introduction

Diverticular disease is a common condition, and its prevalence increases with age.[1] The prevalence of diverticulosis is estimated to be 50%-70% in patients aged ≥80 years.

Acute colonic diverticulitis (ACD) may lead to a wide spectrum of clinical manifestations, including complicated diseases involving hemorrhage, perforation, peritonitis, sepsis, abscess, and/or fistula, representing a potentially life-threatening condition, especially in elderly patients.[2]

Conventionally, "elderly" is defined as a chronological age of 65 or older. Elderly patients are more likely to experience perioperative or postoperative mortality, surgical complications, longer hospital stays, and prolonged recovery.

The treatment of complicated diverticulitis depends on the severity of the disease. Up to 50% of patients admitted to the hospital will undergo emergency surgical intervention during their index admission, with higher rates for those presenting with complicated diverticulitis.[3-5] Medical treatment has been well established in complicated acute diverticulitis, reducing the need for surgery, especially in elective settings.

Recurrences after medical treatment have been described in up to 36% of ACD patients, but only 3% to 5% develop complicated

disease. One-third of patients treated conservatively have reported persisting abdominal complaints during follow-up.[6-8]

The combined WSES/SICG/ACOI/SICUT/AcEMC/SIFIPAC guidelines for diagnosis and treatment of acute left colonic diverticulitis in the elderly[9] advised against non-operative treatment for stage 2b[10] ACD in elderly patients. This recommendation is based on the lack of high-quality evidence supporting non-operative management in cases presenting with distant free intraperitoneal air.

The primary endpoint of the study was to analyze the effectiveness of conservative treatment in stage 2b diverticulitis in elderly patients, evaluating the short- and long-term outcomes.

Materials and Methods

This retrospective single-center population-based study describes 27 elderly patients with complicated acute left-sided colonic diverticulitis, defined as stage 2b according to WSES CT-driven classification for acute diverticulitis (Table 1).[10]

The patients were treated at the Emergency Surgery Department of Parma University Hospital from January 1, 2012, until December 31, 2019, with institutional review board approval (Comitato Etico AVEN – area vasta Emilia nord). All participants provided informed consent. A minimum of three years of follow-up data were collected.

Patients were eligible for inclusion if they were older than 65 years, had a diagnosis of stage 2b complicated acute left-sided colonic diverticulitis confirmed by contrast-enhanced abdominal CT, were managed conservatively, and were hemodynamically stable at the time of diagnosis.

Exclusion criteria included age under 65 years, diagnosis of uncomplicated diverticulitis or any stage other than 2b, presence of non-colonic or non-left-sided diverticulitis, a history of previous episodes of complicated acute diverticulitis, or initial treatment with surgery.

The following characteristics were analyzed: age, sex, symptoms, personal history of diverticulosis documented with endoscopy or other diagnostic tests, comorbidity, immunocompetence status (history of recent cancer, chemotherapy treatment, immunological diseases, immunotherapy), body mass index (BMI), chronic nonsteroidal anti-inflammatory drug (NSAID) therapy excluding 5-aminosalicylic acid therapy (more than three times a week for more than three months in the last two years before acute diverticulitis onset), days of hospitalization (patients were discharged after the improvement of clinical condition, biochemical tests and after oral feeding start), biochemical tests (white blood cells [WBC], hemoglobin [Hb], platelet, C-reactive protein [CRP], procalcitonin [PCT], international normalized ratio [INR]), diagnostic tests, CT classification, location, treatment and follow-up.

Patients were divided into two main groups according to CRP levels: group 1 (CRP<150 mg/dL); group 2 (CRP≥150 mg/dL).[11,12]

Data analysis was conducted using IBM SPSS Statistics by a biomedical statistician. Both univariate and multivariate analyses were performed. Statistical analysis was conducted for the main descriptive indices. Position, dispersion, and shape indices were calculated, including mean, median, mode, 5% trimmed mean, variance, standard deviation, interquartile range (IQR), minimum, maximum, asymmetry, and kurtosis. When relevant, standard errors and the corresponding 95% confidence intervals were also calculated.

Quantitative data are expressed as mean ± standard deviation. The qualitative data were elaborated as absolute frequencies, relative frequencies, cumulated frequencies, and percentages.

The chi-square test was used to evaluate categorical variables, while the Mann-Whitney test was used to evaluate numerical variables. All factors were deemed to be statistically significant for a p-value of less than 5% ($p<0.05$).

Results

In the present study, 27 elderly patients with stage 2b ACD were enrolled and treated first with conservative management. Male gender was reported in 17 (62.9%) patients and female in 10 (37.1%) patients. The mean age was 77.8±6.1 years (range 68-92).

Diffuse abdominal pain was the most common symptom in 10 cases (37.1%). Obesity (BMI more than 30 kg/m^2) was reported in 6 (22.2%) patients. Diverticulosis history was reported in 11 (40.7%) patients. The average white cell count was 12.6±8.8×10^9/L (range 1.9-50.2) in group 1 and 11.24±7.89 (range 3.5-50.25) in group 2. CRP (normal range 0.5-5 mg/dL) was elevated in all the patients (100%). Group 1 (CRP<150 mg/dL) included 15 patients with a mean CRP level of 96.8±34.4 mg/dL, and group 2 (CRP≥150 mg/dL) included 12 patients with a mean CRP level of 195.1±39.9 mg/dL. Clinical characteristics are summarized in Table 2.

All patients were treated with bowel rest and antibiotics (100.0%) according to the recommendations of the WSES 2016 consensus conference.[13]

Amoxicillin-clavulanate and metronidazole were the most common antibiotic therapies in 22 patients (81.4%). Ultrasound-guided percutaneous drainage of abscessed diverticulitis was performed in 2 patients (7.4%). The average length of stay was 8.4±7.0 days (IQR 5-10), 8.8±8.9 days (IQR 5.5-8.0) in group 1, and 8.0±3.8 days (IQR 4.75-10.25) in group 2.

Every patient was discharged from the hospital without complications. No 30-day hospital readmissions were reported, and no 30-day mortality was documented. Average follow-up was 72.1±28.4 months. During follow-up, new episodes of acute diverticulitis were reported in 5 patients (18.5%), only 1 in group 2. Only 1 (3.7%) patient in group 2 had a new complicated episode of diverticulitis that required immediate surgery.

Table 1. 2015 WSES-driven classification of diverticulitis.

Stage	Description
Uncomplicated diverticulitis	Diverticula, thickening of the wall, increased density of the pericolic fat
Complicated diverticulitis	
1A	Pericolic air bubbles or little pericolic fluid without abscess
1B	Abscess ≤4 cm
2A	Abscess >4 cm
2B	**Distant air (>5 cm from inflamed bowel segment)**
3	Diffuse fluid without distant free air (no hole in colon)
4	Diffuse fluid with distant free air (persistent hole in colon)

Table 2. Clinical characteristics.

Parameters	Group 1 CRP<150 mg/dL (n=15)	Group 2 CRP≥150 mg/dL (n=12)	p-value
Age	78.3±6.2 (68-92)	77.1±6.2 (68-86)	0.635
Female	6 (40.0%)	4 (33.3%)	0.734
Immunocompromised patients	5 (33.3%)	1 (8.3%)	0.130
BMI>30 (kg/m^2)	4 (26.6%)	2 (16.6%)	0.553
Chronic NSAID therapy	5 (33.3%)	1 (8.3%)	0.130
WBC	12.0±6.9 (1.97-30.2)	13.4±5.3 (2.5-21.7)	0.681
CRP (mg/L)	96.8±34.4 (21.8-143.9)	195.1±39.9 (151.7-250)	<0.001
LOS (days)	8.8±8.9	8.0±3.8	0.759

CRP, C-reactive protein; BMI, body mass index; WBC, white blood cell; LOS, length of stay.

Discussion

In this study, elderly patients with stage 2b ACD and different CRP levels were conservatively treated, with no patients requiring emergency surgery during the index admission. Only one patient required emergency surgery for a new acute diverticulitis episode during a mean 72.1-month follow-up.

Several studies have been published reporting the effectiveness of non-operative management in cases of perforated diverticulitis, but not in elderly patients.

Despite the lack of specific data on stage 2b in geriatric patients, the results of the present study confirm the tendency towards the conservative treatment of diverticulitis, previously reported in younger patients, resulting in an expansion of knowledge about conservative treatment options for older patients with WSES stage 2b.[9]

Older patients present several conditions that contribute to poor outcomes after surgery. Contributing factors include frailty, preexisting comorbidity, polypharmacy, and delayed diagnosis.[14]

In this context, conservative treatment should be considered in elderly patients with stage 2b acute diverticulitis when feasible. Constant monitoring is crucial for the conservative treatment of diverticulitis, especially in frail older patients, considering the availability of several strategies to minimize the risk of surgery (*e.g.*, percutaneous drainage).

Factors like the size of an abscess, the presence of perforation, or the patient's overall condition can influence the decision to proceed with surgery.[3,4,12]

One retrospective cohort study demonstrated that patients aged 65-79 years had 4-fold greater odds of death following emergency surgery for diverticulitis than younger patients, and this effect increases to 10-fold greater odds for individuals over 80 years old.[15]

Therefore, elderly patients undergoing emergency surgery for acute diverticulitis usually undergo Hartmann's procedure with a permanent colostomy instead of other surgical procedures.[16]

Literature findings report a success rate of 90-99% for conservative treatment for patients with isolated pericolic air,[15-17] without age stratification.

Treatment choices in elderly patients with stage 2b ACD should be carefully evaluated. The decision to operate must take into account the patient's clinical condition, comorbidities, and performance status. Surgery remains the primary treatment option, but in stable patients, the morbidity of an emergency procedure must always be considered, avoiding risky surgical interventions.[18-20]

The study's limitations include its retrospective nature in a single institution and its small sample size. A multicenter cohort study would provide strong evidence and reduce the risk of bias.

Conclusions

The management of stage 2b ACD in the elderly can be challenging. Conservative treatment may be a safe and effective therapeutic approach in selected cases, avoiding unnecessary surgery that can lead to higher morbidities. Continuous monitoring is fundamental when conservative treatment is the treatment of choice.

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