Original study

Introduction

Acute lower gastrointestinal bleeding accounts for approximately 20% of all acute gastrointestinal hemorrhages, and they are the most common urgent cases in gastroenterology. The aim of this study was to determine the most common etiology, efficacy in diagnostics and therapy, and the outcome in patients with acute lower gastrointestinal bleeding.

Material and Methods.

Data were collected from the medical records of 86 patients who had been hospitalized for acute lower gastrointestinal bleeding in 2009 at the Ward of Gastroenterology and Hepatology, Clinical Centre of Vojvodina.

Results.

The average age of the patients was 70.4 years (ranging from 37 to 88), and the largest number of patients 41/86 (47.7%) were between the ages 71 and 80. Colon diverticulosis was the most common cause of bleeding, and it occurred in 21 patients from the study sample (24.4%), and the other causes were malignant tumors (12/86, i.e. 13.9%), polyps (10/86, i.e. 11.6%), anorectal diseases (7/86, i.e. 8.3%) and colitis (8/86, i.e. 9.3%). No diagnostic procedures were performed in 15 patients (17.4%) due to their poor medical condition and comorbidities. The total mortality rate was 6/86 (6.9%), and the largest number of deaths occurred (5/86 i.e. 5.8%) due to a multisystem organ failure and underlying diseases which were not associated with acute lower gastrointestinal bleeding. Uncontrolled bleeding was the cause of death in only 1 patient (1.2%).

Conclusions.

Acute lower gastrointestinal bleeding is most commonly found in the older population, whose age, comorbidities, and ongoing therapy have impact on bleeding lesions, diagnostic and therapeutic modalities and the outcomes of bleeding. Endoscopic procedures are still the gold standard in diagnostics.

Key words: Gastrointestinal Hemorrhage; Lower Gastrointestinal Tract; Diagnosis; Treatment Outcome; Diverticulum; Colonoscopy

Acute Lower Gastrointestinal Bleeding

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Summary

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Material and Methods. Data were collected from the medical records of 86 patients who had been hospitalized for acute lower gastrointestinal bleeding in 2009 at the Ward of Gastroenterology and Hepatology, Clinical Centre of Vojvodina. Results. The average age of the patients was 70.4 years (ranging from 37 to 88), and the largest number of patients 41/86 (47.7%) were between the ages 71 and 80. Colon diverticulosis was the most common cause of bleeding, and it occurred in 21 patients from the study sample (24.4%), and the other causes were malignant tumors (12/86, i.e. 13.9%), polyps (10/86, i.e. 11.6%), anorectal diseases (7/86, i.e. 8.3%) and colitis (8/86, i.e. 9.3%). No diagnostic procedures were performed in 15 patients (17.4%) due to their poor medical condition and comorbidities. The total mortality rate was 6/86 (6.9%), and the largest number of deaths occurred (5/86 i.e. 5.8%) due to a multisystem organ failure and underlying diseases which were not associated with acute lower gastrointestinal bleeding. Uncontrolled bleeding was the cause of death in only 1 patient (1.2%).

Conclusions. Acute lower gastrointestinal bleeding is most commonly found in the older population, whose age, comorbidities, and ongoing therapy have impact on bleeding lesions, diagnostic and therapeutic modalities and the outcomes of bleeding. Endoscopic procedures are still the gold standard in diagnostics.

Key words: Gastrointestinal Hemorrhage; Lower Gastrointestinal Tract; Diagnosis; Treatment Outcome; Diverticulum; Colonoscopy

Sažetak

Uvod. Akutna krvarenja iz donjih partijsa gastrointestinalnog trakta čine oko 20% uzroka svih akutnih gastrointestinalnih krvarenja koja predstavljaju najčešća urgentna stanja u gastroenterologiji. Cilj ove studije bio je da se utvrdje najčešća etiologija, efikasnost u dijagnostici i terapiji, te ishod bolesti kod bolesnika sa akutnim krvarenjem iz donjih partijsa gastrointestinalnog trakta.

Materijal i metode. Podaci su dobijeni iz istorija bolesnih 86 bolesnika koji su bili hospitalizovani zbog akutnog krvarenja iz donjih partijsa gastrointestinalnog trakta u jednogodišnjem periodu, tokom 2009. godine, na Klinici za gastroenterologiju i hepatologiju, Kliničkog centra Vojvodine. Rezultati. Prosečna starost bolesnika iznosila je 70,4 godina (od 37 do 88), a najveći broj bolesnika 41/86 (47.7%) pripada starosnoj grupi od 71 do 80 godina. Divertikuloza kolona predstavljala je najčešći uzrok krvarenja 21/86 (24.4%), a ostali uzroci bili su malignanteti kolona 12/86 (13.9%), polipi 10/86 (11.6%), bolesti anorektalne regije 7/86 (8.1%) i koliti 8/86 (9.3%). Kod 15/86 (17.4%) bolesnika nisu sprovođene nikakve dijagnostičke procedure sa ciljem identifikacije uzroka krvarenja zbog teškog opšteg stanja i komorbiditeta. Ukupan mortalitet kod bolesnika sa akutnim krvarenjem iz donjih partijsa gastrointestinalnog trakta iznosio je 6/86 (6,9%), a najveći broj smrtnih ishoda 5/86 (5,8%) posledica je multisistemske organske insuficijencije i pridruženih bolesti koji nisu povezani sa krvarenjem. Samo kod 1/86 (1,2%) bolesnika uzrok letalnog ishoda bio je recidiv krvarenja. Zaključak. S obzirom da se akutna krvarenja iz donjih partijsa gastrointestinalnog trakta češće javljaju kod starije populacije, samo životno doba, prisutni komorbiditeti i terapija utiču na vrstu krvarenja i naslednje ishode. Udaljene bolesti i dalje zlatni standard u dijagnostici predstavljaju endoskopske procedure.

Ključne reči: Gastrointestinalna krvarenja; Donji gastrointestinalni trakt; Dijagnoza; Išod lečenja; Divertikulum; Kolonskopija

Introduction

Acute lower gastrointestinal tract (GIT) bleeding accounts for approximately 20% of causes of all acute gastrointestinal hemorrhage. Annual incidence is 20–27 cases per 100,000 adults in western countries [1]. The source of bleeding is located distally to the ligament of Treitz, and is more com-
Acute lower gastrointestinal bleeding commonly found in older population (63 to 77 years of age), which affects the type of bleeding lesion. Its clinical manifestations may range from mild self-limiting bleeding to massive life-threatening hemorrhage. The mortality rate, which is up to 5% among these patients, depends on the severity of bleeding, advanced age and the presence of comorbidities [2]. After the initial evaluation of the severity of bleeding and resuscitation of the patient, the diagnostic and therapeutic approach remains the challenge for any doctor. It has to be individualized because it depends on a number of factors, such as etiology, localization and the amount of bleeding and the time of admission to the hospital. Special attention should be paid to comorbidities, coagulopathies and the use of anticoagulant and antiaggregation therapies. Identifying the cause of bleeding may be difficult as most hemorrhages stop spontaneously or the bleeding is intermittent [2–4]. In the first encounter with the patients with lower gastrointestinal bleeding it is essential to recognize those suffering from severe bleeding and should therefore be hospitalized (over the age of 60, presence of comorbidities, signs of hemodynamic instability, history of an ulcerous disease and those taking ulcerogenic drugs. Early colonoscopy (examination performed within 24 hours after the first occurrence of bleeding) helps reveal the cause of hemorrhage in as many as 90% of patients when it is possible to perform some of the endoscopic methods of hemostasis. If the examination is conducted at a later time, the sensitivity and specificity of colonoscopy will be reduced to 45% [8]. However, no significant difference in the outcome of the disease was recorded between urgent and delayed colonoscopy although hospitalization period was shorter when the examination was performed earlier [9]. Angiography and radionuclide methods are only used in cases of massive bleeding when colonoscopy is not feasible or in cases of recurrent hematochezia when colonoscopy has failed to determine the cause of bleeding [5, 10, 11]. If the diagnostic procedures performed fail to determine the source of bleeding in the colon, various methods of small intestine exploration follow (enteroclysis, enteroscopy, videoendoscopic capsule, Meckel diverticulum scintigraphy). Surgical treatment should be considered in the cases where bleeding persists despite all measures taken, in patients who

Abbreviations

- GIT – gastrointestinal tract
- NSAIDs – non-steroid anti-inflammatory drugs
- CT – computed tomography

Table 1. Patients’ General Data

<table>
<thead>
<tr>
<th>Osnovni podaci bolesnika</th>
<th>86</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of hospitalized patients/Broj hospitalizovanih bolesnika</td>
<td>86</td>
</tr>
<tr>
<td>Mean age/Prosečna starost</td>
<td>70.4 years/godine</td>
</tr>
<tr>
<td>Male gender/Muški pol</td>
<td>52.3%</td>
</tr>
<tr>
<td>Bleeding manifestation/Prezentacija krvarenja:</td>
<td></td>
</tr>
<tr>
<td>red/crvena</td>
<td>60 (69.7%)</td>
</tr>
<tr>
<td>maroon/bordo</td>
<td>18 (21%)</td>
</tr>
<tr>
<td>black/crna</td>
<td>8 (9.3%)</td>
</tr>
<tr>
<td>Abdominal pain/Bol u trbuhu</td>
<td>44.2%</td>
</tr>
<tr>
<td>Mean duration of hospitalization/Prosečna dužina hospitalizacije</td>
<td>14.2 days/dana</td>
</tr>
<tr>
<td>Use of medications/Upotreba lekova:</td>
<td></td>
</tr>
<tr>
<td>Oral anticoagulants/Oralni antikoagulansi</td>
<td>21</td>
</tr>
<tr>
<td>Antiaggregational therapy/Antiagregaciona terapija</td>
<td>1</td>
</tr>
<tr>
<td>Dual therapy/Dvojna terapija</td>
<td>18</td>
</tr>
<tr>
<td>NSAIDs/NSAIL*</td>
<td></td>
</tr>
<tr>
<td>Fatal outcome/Smrtni ishod</td>
<td>6</td>
</tr>
<tr>
<td>Number of re-hospitalized patients due to bleeding relapse/Broj rehospitalizovanih zbog recidiva krvarenja</td>
<td>2</td>
</tr>
</tbody>
</table>

*NSAIL – nesteroidni antinfiamatorni lekovi
have received more than 6 blood units during the first 24 hours and in those who have had bleeding relapse. The purpose of preoperative diagnostics is to avoid extensive surgical intervention (“blind colectomy”) and to confirm that the hemorrhage originates from the lower GIT [2].

The study was aimed at determining the most common etiology, diagnostic and therapeutic efficacy and the outcome of disease in patients with acute lower gastrointestinal bleeding.

**Material and Methods**

The research was conducted as a retrospective study including patients hospitalized due to acute lower gastrointestinal bleeding at the Ward of Gastroenterology and Hepatology over the period of one year, 2009. The data used for the study were obtained from the medical records.

The diagnosis of acute lower gastrointestinal bleeding at admission was based on the anamnesis data and physical examination of the patients by means of digitorectal examination, which provided the data on the clinical manifestation of bleeding. Medical history provided the data on previous diseases that could have been potential causes of bleeding, comorbidities, ongoing anticoagulant and antiaggregation therapies, usage of NSAIDs and diagnostic procedures performed. Diagnostics was not performed in a certain number of patients due to their general condition and present comorbidities, and consequently, the cause could not be established. Some of the patients had been hospitalized more than once due to hematochezia, and since their etiology in most cases had been known from before, they were discharged from the hospital after the bleeding stopped and substitution was administered without repeating the diagnostic procedures. The patients who underwent colonoscopy had the time from the moment of admission to hospital to the moment of examination calculated, and this was also taken in consideration when calculating the complete duration of hospitalization.

### Results

During the period of one year (2009), 86 patients were treated at the Ward of Gastroenterology and Hepatology of the Clinical Center of Vojvodina due to acute lower gastrointestinal bleeding. The mean age of the patients was 70.4 years (ranging from 37 to 88), and the majority of patients (41/86 or 47.7%) were in the age group from 71 to 80 years.

Only 11/86 (12.8%) patients did not have comorbidities, while comorbidities increased in other patients with their increasing age. The most common underlying diseases were cardiovascular diseases, cerebrovascular insult, diabetes, chronic obstructive pulmonary disease and chronic renal insufficiency. Out of 75 patients, 55 (73.2%) with comorbidities belonged to the age group from 61 to 80 years. Anticoagulant and antiaggregation therapy was taken by 28/86 (32.6%) patients, almost half of whom were in the age group from 71 to 80. Eighteen patients had previously used NSAIDs (21.3%) (Table 1).

Colonoscopy was performed in 54 (62.8%) patients who were admitted due to bleeding. Total colonoscopy was performed in half of them (28/86 or 51%). On average, colonoscopy was performed on the seventh (7.8) day upon admission to the hospital (Table 2).

Several potentially bleeding lesions were found in 8/54 patients.

Out of 54 colonoscopies, urgent colonoscopy was performed in two patients. Seven colonoscopies were performed on the second day upon admission, and two on the third day. Twenty examinations were performed between the fourth and seventh day of hospitalization, and the rest of them after the seventh day (in 23 patients). The success rate was 100% in colonoscopies performed on the first day (in two patients who had bleeding diverticula and hemorrhagic colitis, each). The colonoscopies performed on the second day revealed bleeding lesions or ones that had signs of recent
Acute lower gastrointestinal bleeding

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Table 3. Final Diagnoses at Discharge from the Hospital

<table>
<thead>
<tr>
<th>Diagnosis/Dijagnoza</th>
<th>Number of patient</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colonic diverticulosis/Divertikuloza kolona</td>
<td>21</td>
<td>24.4</td>
</tr>
<tr>
<td>Unknown bleeding lesion/Nepoznata krvareća lezija</td>
<td>15</td>
<td>17.4</td>
</tr>
<tr>
<td>Malignant colon tumors/Maligni tumori kolona</td>
<td>12</td>
<td>13.9</td>
</tr>
<tr>
<td>Anorectal disease (hemorrhoids, fissures)/Anorektalna bolest (hemoroidi, fissure)</td>
<td>7</td>
<td>8.1</td>
</tr>
<tr>
<td>Colitis (IBD, hemorrhagic, ischemic)/Kolitisi (IBD, hemoragijski, ishemijski)</td>
<td>8</td>
<td>9.3</td>
</tr>
<tr>
<td>Bleeding lesion in proximal GIT/Krvareča lezija u proksimalnom GIT-u</td>
<td>6</td>
<td>6.9</td>
</tr>
<tr>
<td>Colonic polyps/Polipi kolona</td>
<td>10</td>
<td>11.6</td>
</tr>
<tr>
<td>Colonic angiodisplasia/Angiodisplazije kolona</td>
<td>6</td>
<td>6.9</td>
</tr>
<tr>
<td>Aortoenteric fistula/Aortoenterična fistula</td>
<td>1</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Table 3. Konačne dijagnoze pri otpustu bolesnika

IBD – inflammatory bowel disease/zapaljenske bolesti creva; GIT – gastrointestinal tract/gastrointestinalni trakt

The one-year study analyzed the clinical manifestations and the most common causes of lower gastrointestinal bleeding, the diagnostic approaches and outcomes of the disease.

Lower gastrointestinal bleeding is more common among older population. The mean age of the patients studied was 70.4 years, the majority of them (41/86, or 47.7%) being in the age group between 71 and 80, and only 5/86 (5.8%) were below 60 years of age. Only 11/86 (12.8%) patients had no comorbidities, while the number of comorbidities increased in other patients with their increasing age, resulting in a higher rate of use of aspirin, anticoagulant therapies and NSAIDs (46/86, or 53.5%). No significant difference between the genders was found.

The exploration of the upper GIT is recommended especially in patients with history of previous ulcerous diseases, usage of potentially ulcerogenic drugs and in case of massive bleeding. Esophagogastroduodenoscopy was performed in 53/86 (61.6%) patients. Active bleeding lesion in the proximal GIT was found in 6/53 patients (11.3%). These data indicate the importance of es-
ophagogastroduodenoscopy in the diagnostics of patients who were initially hospitalized with the symptoms of lower gastrointestinal bleeding. This is also shown by the literature data, according to which the causes of bleeding proximal to Treitz’s ligaments were found in 0-11% patients [1, 6, 7].

Colonoscopy was performed in 54/86 (62.8%) patients. Early colonoscopy is considered to be safe and useful because it ensures successful diagnosis and the application of some of the endoscopic hemostasis procedures decreasing the risks of complications. However, due to the advanced age of the subjects and underlying morbidities which affect the possibility and quality of preparation for examination, as well as the diagnostic procedure itself, total colonoscopy was performed only in a half of the study sample. This considerably reduced the specificity and sensitivity of the procedure itself. Early colonoscopy reduces the duration of hospitalization [12, 13].

The success of determining the bleeding lesions was 100% when colonoscopy was performed on the first day (2 patients – bleeding diverticula and hemorrhagic colitis). The colonoscopies performed on the second day upon admission revealed bleeding lesions or ones with signs of recent bleeding in 6 out of 7 patients. Colonoscopy that was performed later in eight patients revealed several potentially bleeding lesions.

In the cases where examination procedure showed the signs of recent bleeding, the diagnosis was easily determined. However, when colonoscopy performed upon the cessation of bleeding reveals diverticulosis without other potentially bleeding lesions, it can be assumed as the cause of bleeding only to a certain extent [6, 8].

Colonic diverticulosis is the most common cause of bleeding (21/86 or 24.4%), which is in line with most literature data (17-40%). According to the literature, angiodisplasia accounts for 2/30% of lower gastrointestinal bleeding. In our research it was the cause of bleeding in 6/86 (6.97%) patients [6, 14]. The other significant causes were colon malignities 12/86 (13.9%), benign colon tumors 10/86 (11.6%), anorectal diseases 7/86 (8.1%), and colitis 8/86 (9.3%). Fifteen out of 86 (17.4%) patients were discharged with the diagnosis of enterorrhagia because no diagnostic procedures had been performed to determine the cause of hemorrhage due to their general condition and comorbidities.

The most common cause of bleeding manifested as maroon stool was diverticulosis (7/18 or 39%), black stool was most frequently caused by angiodisplasia (3/8 or 37.5%) and red stool by benign and malignant colon tumors (18/60 or 30%).

In 78/86 (90.7%) patients, bleeding stopped spontaneously upon the administration of supportive and substitution therapy (infusion solutions and transfusions administered in order to maintain hemodynamic and hematological stability). One patient (1.2%) underwent urgent surgery on the first day because of active uncontrollable bleeding from colonic diverticulum, and 10/86 (11.6) patients were operated on for malignancy within the elective program. Bleeding relapse was recorded in 14 patients (16.3%), while 3/86 (3.5%) patients had bleeding relapse within 3 months from the previous bleeding (angiodisplasia, diverticulosis).

Total mortality rate in patients with acute lower gastrointestinal bleeding was 6/86 (6.9%), which is higher in comparison with the mortality rates in a number of published studies (2.9%-3.6%) [6]. The highest rate of fatal outcomes (5/86 or 5.8%) was the consequence of multisystem organ insufficiency and associated diseases, which were not related to the hemorrhage. Fatal outcome resulted from disseminated malignant diseases (lungs and bladder) and the acute myocardial infarction in two patients and in one patient, respectively, whereas the cause of fatal outcome in two other patients was cardiac decompensation. Bleeding relapse was the cause of fatal outcome in 1/86 (1.16%) patient only.

Conclusion

Since acute lower gastrointestinal bleeding usually occurs in older population, the age itself, the presence of comorbidities and the ongoing therapies affect the type of bleeding lesion, diagnostic modalities and outcomes. The most common causes of hemorrhage are diverticulosis, malignancies and diseases of anorectal region, although it has to be noted that a significant number of patients remain undiagnosed. Endoscopic procedures remain to be the gold standard of diagnostic procedures (esophagogastroduodenoscopy and colonoscopy). Early colonoscopy has much higher sensitivity and specificity compared to the delayed one, although it seldom affects the outcome of the disease because the bleeding stops spontaneously in majority of cases and mortality rate is related to comorbidities.
References