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¹General Hospital "Sv. Apostol Luka"
Doboj, Doboj, Bosnia and Herzegovina

²Academy of Medical Sciences of Bosnia
and Herzegovina, Sarajevo, Bosnia and
Herzegovina

Corresponding author: Academician
Muharem Zildzic, MD, PhD. Academy
of Medical Sciences of Bosnia and
Herzegovina, Sarajevo, Bosnia and
Herzegovina. E-mail: zildzic@yahoo.com.
ORCID ID: <https://orcid.org/0000-0001-5418-2274>.

Colonoscopic Evaluation of Lower Gastrointestinal Bleeding (LGIB): Practical Approach

Zoran Matkovic¹, Muharem Zildzic²

ABSTRACT

Background: Haematochesia (Lower Gastrointestinal Bleeding (LGIB) is the most common reason for endoscopic examination. Generally it is caused by hemorrhoids and diverticular disease, but other anorectal conditions can also lead to LGIB. Recurrent bleeding may result in secondary iron deficiency anemia. Colonoscopy is the primary diagnostic option for establishing a diagnosis of colonic bleeding. **Objective:** This study aimed to analyze symptoms and endoscopic finding (specially hemorrhoids) who may be sources of LGIB. Second goal of this study is to estimate time from onset of symptoms to performance of a colonoscopy. **Methods:** A retrospective study included 603 adult patients who underwent colonoscopy in General Hospital "Sv. Apostol Luka", Doboj, Bosnia and Herzegovina, between 1.1.2020 and 31.12.2020. **Results:** Average age of the examined population was 62±13,3years. According to the gender they were mostly men. To be exact, by percentage it was 53.7% of men and 46,3% of women, or by number: 324 men and 279 women. The most common indications for colonoscopy were LGIB (48,8%), abdominal pain and irregular stool. Most frequent endoscopic findings were hemorrhoids 42%. Normal findings had almost one third of all examined patients. Combined findings-presence of more clinical entities in one patient were presented in 95 cases. In the group with hemorrhoids were almost two thirds of males, but there was no gender difference noted in between group with LGIB and without LGIB. More than half patients were older than 61 years. Anemia was presented in almost 20% of cases. Significantly it is higher frequency of abdominal pain, irregular stool and weight loss observed on the group without LGIB. Also, significantly more frequently patients with LGIB underwent colonoscopy in 0-30 days when compared with patients without LGIB (p=0,016). **Conclusion:** In patients with haematochesia, taking a careful medical history is mandatory. Hemorrhoids, diverticular disease and colorectal cancers are the most common causes of bleeding. Patients with LGIB and abdominal pain were previously examined with colonoscopy. Completely colonoscopy is advocated to detect probable proximal lesions.

Keywords: Lower Gastrointestinal Bleeding (LGIB), Colonoscopy, practical approach.

1. BACKGROUND

Gastrointestinal diseases are one of most frequent causes of hospitalization in United States, and about 40% of all cases are caused by hematochesia (Lower Gastrointestinal Bleeding (LGIB) (1). LGIB is bleeding distal to Treitz ligament. Annual incidence is about 20 to 33 per 100 000 adults and in most cases bleeding is from large bowel. Incidence can be increased by age and presence of other gastrointestinal diseases and correlate with comorbidity (arterial hypertension, hepatic cirrhosis, and portal hypertensive colopathy) as well as polypharmacy (NSAIL, anticoagulants) (2). Visible rectal bleeding, as an important sign of colon disease, represent indication in 22% of all colonoscopies in adults (3). Most LGIB resolve spontaneously, regardless of source, on the opposite to UGIB (Upper Gastrointestinal Bleeding). Some studies suggest that patients with LGIB tend to have longer stay in hospital (4, 5).

Diverticular disease is the most common cause of significant hematochesia. In elderly, diverticular disease is leading cause of LGIB, reporting rates between 20-50% (4, 6). Recent studies found that hemorrhoids were underlying etiology in 24 to 64% of patients presenting with LGIB. Although hemorrhoids may be present in majority of patients with LGIB, often they are considered as incidental findings (7, 8). Hemorrhoids disease is one of the most common illness. About 70% of adults suffer once in their lifetime from

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hemorrhoids with minor symptoms (9). But prevalence of symptomatic hemorrhoids (bleeding, thrombosis) is about 20%. It means that 50% of people with hemorrhoids do not complain about their symptoms (10).

LGIB is usually mild condition requiring minimal (supporting) or no treatment, but some cases with severe and life threatening ones are requiring immediate treatment. Early colonoscopy in cases of "severe hematochezia" is recommended by US Guidelines (11). However recent meta-analysis have shown that there is no benefit of early comparing to elective colonoscopy (12). Consequences of delay in completion of colonoscopy after LGIB have not been widely examined. The main causes of iatrogenic delay include insufficient clinical investigation and lack of awareness when typical first symptoms were presented. For example: significant correlation was found for the time between onset of symptoms and definitive surgical and adjuvant therapy with tumor (Colorectal) stage (13).

2. OBJECTIVE

The aim of this study was to analyze endoscopic findings in patients with episodes of LGIB, other symptoms, demographic characteristics and estimate the time interval from onset of symptoms to colonoscopy (eventually delayed on examination).

3. PATIENTS AND METHODS

Retrospective study of patients who underwent colonoscopy from 1.1.2020 to 31.12.2020. was conducted in General hospital " Sv. Apostol Luka", Doboj. Colonoscopies were performed by several surgeons. The list of patients was retrieved using personal colonoscopy database. This study was approved by the Ethical committee of the Public health institution General hospital " Sv. apostol Luka", Doboj, number 994-1/21, from 1.3.2021. All patients underwent colonoscopy after bowel preparation-cleansing using Colopur or Moviprep. Colonoscopy is performed on patients left lateral position, also provided that patient has begin in left lateral position with regular blood pressure, regular hearth rate and adequate oxygen saturation, with monitoring in the presence of anesthesiologist (short-term intravenous general anesthesia). We recorded demographic characteristics of patients (gender, age), clinical indications for colonoscopy-Lower Gastrointestinal Bleeding (haematochezia, usually recurrent), anemia, abdominal discomfort and pain, changes in bowel emptying, diarrhoea, states after resection (control examination), colon thickening on CT and primary tumor searching. All significant findings were noticed including hemorrhoids, diverticulosis,

polyps, colitis (inflammatory bowel disease), colorectal cancer (CRC), angiodysplasia, anal fissure and normal finding. Also, we recorded grades of hemorrhoids, the time from onset of symptoms to colonoscopy, complete blood count results (anemia) and comorbidity such as hepatic cirrhosis, myocardopathy, condition after chemo and radiotherapy, use of oral anticoagulants and nonsteroidal anti-inflammatory drugs.

Statistical analysis

Descriptive statistics were calculated for the baseline demographic and clinical features, as well as treatment outcomes. Continuous variables were presented as means with standard deviations, while categorical variables are presented with numbers and percentages. Differences between groups were analyzed using Chi square test. The level of significance was set at 0.05. Statistical analysis was performed using the IBM SPSS 21 (Chicago, IL, 2012) package.

4. RESULTS

A total of 603 patients underwent colonoscopy, mean age 62.0±13.3 years, with the highest frequency in >61 age category (Table 1).

		N(%)
Gender	male	324 (53.7)
	female	279 (46.3)
Age categories	21-40	47 (7.8)
	41-60	202 (33.5)
	>61	354 (58.7)

Table 1. Characteristics of patients underwent colonoscopy

There were total of 294 patients with LGIB (Table 2). Almost 2/3 of patients were men and more than half of patients with hemorrhoids were older than 61 years (Table 2).

		n (%)
Gender	male	173 (58.8)
	female	121 (41.2)
Age categories	21-40	21 (7.1)
	41-60	104 (35.4)
	>61	169 (57.5)

Table 2. Characteristics of patients with LGIB

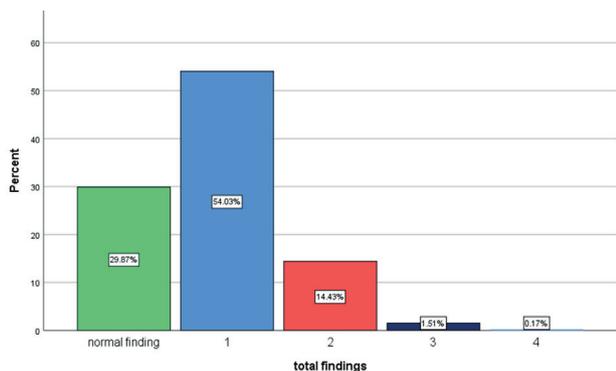
Symptoms and sings-indication for colonoscopy are presented in Table 3. The most frequent symptoms presented in patients who underwent colonoscopy were LGIB (48.8%), abdominal pain (44.9%), and irregular stool (41.6%). Anemia (18.3%) and weight loss (8.5%) colon thickening on CT scan, status post resection and

LGIB 294 (48.8%)	Irregular stool 251 (41.6%)	Abdominal pain 271 (44.9%)	Anemia 110 (18.3%)	Weight loss 51 (8.5%)	Post resection 38 (6.3%)	Colon thickening on CT 56 (9.3%)	Primary tumor search 32 (5.3%)
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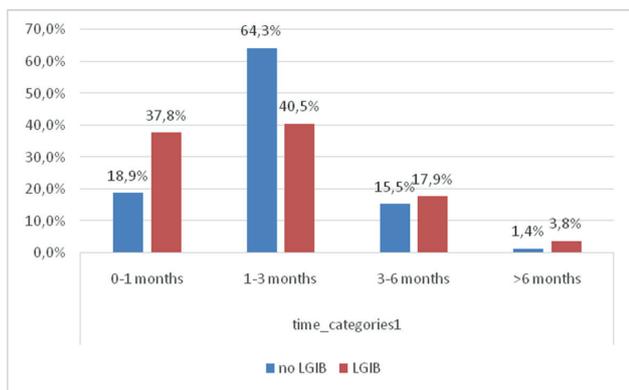
Table 3. Symptoms and sings-indication for colonoscopy

Hemorrhoids 252 (42%)	Diverticulosis 111 (18.4%)	Polyps 73 (12.1%)	Cancer 52 (8.6%)	Colitis 34 (5.6%)	Angiodysplasia 6 (1%)
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Table 4. Colonoscopy findings



Graph 1. Findings in patients underwent colonoscopy, One disease, Combined findings (two disease), Three disease, Four disease per patient



Graph 2. Time to colonoscopy according to LGIB



Figure 1. Hemorrhoids without LGIB



Figure 2. Hemorrhoids with LGIB

primary tumor search were presented as less frequently (Table 3). The most frequent findings on colonoscopy were hemorrhoids (42%), diverticulosis (18.4%), and polyps (12.1%), less frequent were CRC, Colitis and angiodysplasia (Table 4).

Percentage of colonoscopy findings (Normal, with one disease and two or more-combined disease) are presented in Graph 1. Most of patients (more than a half) had one finding, and two findings were presented in 14%, while in 1,5% of cases were three diseases. Time to colonoscopy was analyzed in all patients who underwent colonoscopy. Significantly more frequently patients with LGIB underwent colonoscopy in 0-30 days, when compared with patients without LGB ($p < 0.001$) (Graph 2).

There were total of 252 patients with hemorrhoids - 69 (27.4%) without haematochesia and 183 (72.6%) with LGIB (Figures 1 and 2). Almost two thirds of patients were men, and there were no gender differences between LGIB and without LGB groups. More than half of



Figure 3. Polypus and diverticulosis



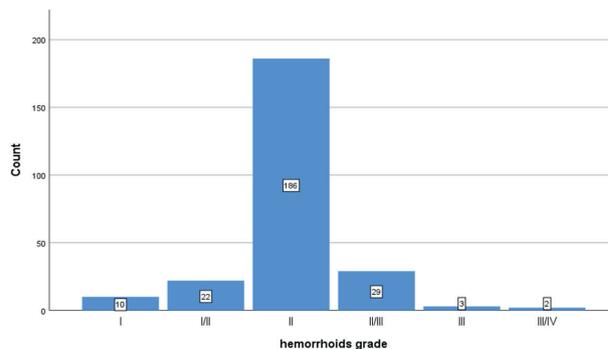
Figure 4. Diverticulosis



Figure 5. Colitis



Figure 6 Angiodysplasia



Graph 3. Hemorrhoids distribution by stadium

patients with hemorrhoids were older than 61 years, and there were no age differences between groups.

The irregular stool was present in one third of patients of total patients. A significantly higher frequency of irregular stool was present in the group without bleeding. Abdominal pain was presented in one third of patients, but, with higher frequency in patients without hemorrhoids. Anemia was present in almost 20% of patients, with higher frequency in the LGIB group, the difference was close to conventional level of significance. A quarter of all our patients were with comorbidity. Weight loss presented in 13 patients, significantly higher frequency observed on group without LGIB. Disease stadium was similar between groups (Graph 3).

Combined findings, the presence of more clinical entities that can lead to LGIB in one patient, were present in 95 cases (Figure 3). Diverticulosis was the most frequent finding (Figure 4), in 45 patients with hemorrhoids, and significantly more frequent in LGIB group. Polypus, colon cancer, colitis, and angiodysplasia were discovered in less than 10% of patients without significant difference between groups. Some frequent degree of hemorrhoids was the second (Graph 3).

	Hemorrhoids Total n=252	Without LGB n=69	LGB N=183	P	
Gender	male	144 (57.1)	35 (50.7)	109 (59.6)	0.206
	female	108 (42.9)	34 (49.3)	74 (40.4)	
Age categories	21-40	21 (8.3)	4 (5.8)	17 (9.3)	0.392
	41-60	94 (37.3)	23 (33.3)	71 (38.8)	
	>61	137 (54.4)	42 (60.9)	95 (51.9)	
Symptoms:					
irregular stool	82 (32.5)	32 (46.4)	50 (27.3)	0.004	
abdominal pain	81 (32.1)	39 (56.5)	42 (23)	<0.001	
anemia	47 (18.7)	8 (11.6)	39 (21.4)	0.075	
weight loose	13 (5.2)	9 (13)	4 (2.2)	0.001	
Combined findings:					
diverticulosis	45 (17.9)	6 (8.7)	39 (21.3)	0.020	
polyps	24 (9.5)	6 (8.7)	18 (9.8)	0.783	
colorectal cancer	6 (2.4)	1 (1.4)	5 (2.7)	0.551	
colitis	8 (3.2)	0 (0)	8 (4.4)	0.078	
angiodysplasia	4 (1.6)	1 (1.4)	3 (1.6)	0.910	
Post resection	8 (3.2)	5 (7.2)	3 (1.6)	0.075	

Table 5. Clinical characteristics of hemorrhoids on colonoscopy

5. DISCUSSION

In our study mean age was 62 years and most patients were older than 61. Other studies data showed a highest frequency of patients in group between 50-59 years (21, 22). In our study most patients were male, which is similar to other studies data (14, 15).

In our hospital we performed 603 colonoscopies (about 200/100 000 residents) which is lower number than in literature (16). This can be explained with not existing screening colonoscopy for CRC. Data searched in the scientific literature showed a 20% increase in colonoscopy activity over the last 5 years (23). Similal data were found in our materials-during 2017 year we performed 495 colonoscopyies, last year it was 603. Most frequent indication for colonoscopy was LGIB, almost 50%, while in recent data frequency of LGIB is smaller-26.5%-45% (17). Anemia was noted in about 20% of all patients. In the literature, percentage of screening colonoscopy is about 15-20% (17). Inappropriate indications based on either Guidelines are as high as 30% (18).

There are many cause-etiology factors for LGIB. Pathology affecting reach vascularized organs of gastrointestinal tract can lead to bleeding. For example-Constipation and hard stool (local trauma to the hemorrhoidal complex), increased intrabdominal pressure and prolonged straining, pelvic floor dysfunction, use of some medications (anticoagulants drugs) predispose hemorrhoids and LGIB (19).

The most serious cause of LGIB is colorectal cancer (CRC) (Figure 5). According to Stulhofer LGIB is consequences of colorectal cancer in 13% of men and 20% of women older than 45years (20). In our study, we had 52 patients with CRC, and 6 of them also had hemorrhoids. Hemorrhoids and CRC, although very different conditions, may share similar symptoms and signs.(Owerlap). CRC is often mistaken for hemorrhoids leading to delay of diagnosis and ineffective and wrong treatment. According to Pedersen LGIB was associated with long

patients delay in CRC patients. Although more patients with LGIB have reported that they have been wondering if their symptoms could have been caused by cancer than patients without hematochezia (21).

Besides LGIB, other indications for colonoscopy are change in bowel habits, abdominal pain and discomfort, weight loss, change in caliber of stool, anemia, CT tickening on CT, control colonoscopy after resection and age more than 50 years with no complete evaluation within 5- 10 years. The risk of finding colorectal cancer in patients with LGIB is higher than the expected risk in asymptomatic subjects (3).

Frequency of endoscopic finding depends if there is chronic, intermittent hematochezia (little) or acute lower gastrointestinal bleeding (massive). Haemorrhoids are commonest in cases of little haematochezia, while diverticular disease is dominant in patients with massive bleeding (4).

In our study patients were with intermittent hematochezia-according to number of anemia (below 20%), and we rarely performed an early colonoscopy. There is no evidence that early colonoscopy reduces rebleeding or requirement for surgery and mortality, but may increase rate of detection of signs of recent hemorrhage (22). Delay colonoscopy was associated with longer length of hospital stay (23). In our material most frequent findings were hemorrhoids, diverticulosis and polyps. In literature data frequency is similar but with some bigger percentage of these three findings (24, 25). Normal findings in literally data is about 16 to 25% in our study that is some more-29.1%. This result probably because indication is not appropriated in some cases, and we do not have screening (26). In case of massive acute lower gastrointestinal bleeding diverticula is most frequent finding (27, 28). In older patients many incidence of polyps, cancer and diverticula, and in our study there is similar. Besides these findings we have combined findings (presents two or more colorectal disease) coincidental

pathology-about 15%. Diverticulosis was most frequent coincidental findings-combination hemorrhoids and diverticulosis and significantly more in patients with hematochezia (25, 27).

When compared two groups of patients with haemorrhoids underwent colonoscopy-with LGIB and without LGIB, we found that irregular stool, abdominal pain and weight loss is significantly higher in patients without LGIB. We think that is because the patients were more worried about these symptoms and that they early contact their general practitioner-before LGIB occurred.

Hemorrhoidal disease is the commonest cause of rectal bleeding (scant, painless hematochezia), but almost 20% of patients have anal fissure with anal pain (29). In our study presence of fissure was very small-sporadically. Most patients over 45 years old presenting with LGIB require colonoscopy, to treat eventual premalignant polyps and colorectal cancer and we do it (30).

Two thirds of patients with hemorrhoids have LGIB and also two thirds were men, but there is difference between gender in the group with LGIB and without LGIB. One third of patients with hemorrhoids were asymptomatic and they are usually coincidental finding. This is overlap situation: LGIB in patients who do not have hemorrhoids and patients without LGIB and do have hemorrhoids. In this situation other reasons for symptoms must be evaluated-some coincidental findings. Hemorrhoids are progressive disease-has a evolution nature, and they are most frequent in the elder age (most of our patients were older than 61 years) (30). Most common grades of hemorrhoids in our study were second degree, while in some studies there is almost same percentage grades I,II and III-about 30% (31). We found Colorectal cancer in 8.6% of patients and there is no difference between patients with and without LGIB. That percentage is lesser than in other recent studies-where is 10,3-21% (3). Risk of colorectal cancer is some higher in patients with LGIB in literal data (3, 31). Other colonoscopy findings (polypus, colitis, angiodysplasia including follow up colonoscopy-post resection) are presented in less than 10% of patients and this is similar data in comparison with literature data (17).

Time to colonoscopy (between onset of symptoms and signs to undergo examination) is significant less in patients with LGIB. Most patients underwent colonoscopy in the first 30 days. That is not surprise-rectal bleeding is a kind of "red alarm" symptom for most people. But, some studies concluded that greater proportion of patients younger than 50 years were diagnosed with advanced stage of colorectal cancer than in older. This difference could not be explained simply by delays from symptom onset to diagnosis. Although tm biology may be important determinant of stage at diagnosis, clinicians should be aware of colorectal cancer alarm symptoms, family history and genetic factors (32).

In our country (region) almost 40% of patients with colorectal cancer were diagnosed on operation room presenting as ileus or perforation proximal segment of obstructed bowel. That is due to lack of screening-bigger

number of urgent cases and smaller number of colonoscopic verified cases of CRC.

Since hemorrhoids are common, LGIB should not be ascribed only to hemorrhoidal disease until other lesions have been excluded. Colonoscopy may be warranted to exclude malignant disease or some kind of colitis (Inflammatory Bowel Disease). Successful care of patients with LGIB often requires an integrated multispecialty approach (4). Because coincidental pathology in large proportion, especially the elderly, it is recommended to do colonoscopy before starting treatment of hemorrhoids (7). Colonoscopy provides the best method for examination and treatment (eventually polypectomy) patients with LGIB (33).

6. CONCLUSION

LGIB is common clinical problem and many disorders can cause that condition. Many population has hemorrhoids, diverticular disease, polypus with and without symptoms.

Patients with LGIB are older, but according to the gender it is more frequent in males. Danger point is delayed in diagnostic evaluation, specially in treatment of hemorrhoidal disease, because there are overlap symptoms between hemorrhoids and colorectal cancer.

Delay in colonoscopic evaluation is often in patients without LGIB. Digito-rectal examination should be mandatory in a patients with LGIB. Completely colonoscopy is advocated to detect others, proximal resources of LGIB.

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REFERENCES

1. Peery AF, Crockett SD, Barritt AS, Dellon ES, Eluri S, Gangarosa LM, Jensen ET, Lund JL, Pasricha S, Runge T, Schmidt M, Shaheen NJ, Sandler RS. Burden of Gastrointestinal, Liver, and Pancreatic Diseases in the United States. *Gastroenterology*. 2015 Dec; 149(7):1731-1741.e3.
2. Adegboyega T, Rivadeneira D. Lower GI bleeding. An update on incidence and causes. *Clin Colon Rectal Surg*. 2020 Jan; 33(1): 28-34.
3. Lieberman D. Rectal bleeding and diminutive polyps. *Gastroenterology*. 2004 Apr; 126(4): 1167-1174.
4. Schatz RA, Rockey DC. Gastrointestinal Bleeding Due to Gastrointestinal Tract Malignancy: Natural History, Management, and Outcomes. *Dig Dis Sci*. 2017 Feb; 62(2): 491-501. doi: 10.1007/s10620-016-4368-y.
5. Oakland K. Changing epidemiology and etiology of upper abd lower gastrointestinal bleeding. *Best Pract Res Clin.gastroenterol*, 2019 Oct-Dec; 42-43: 101610.
6. Khalifa A, Rockey DC. Lower Gastrointestinal bleeding in Patients with cirrhosis. Etiology and outcomes. *Am J Med Sci*. 2020 Apr; 359(4): 201-211.

7. Koning MV, Loffled RJLF. Rectal bleeding in patients with hemorrhoids-coincidental findings. *Family practice*. 2010 Jun; 27(3): 260-262.
8. Person OK, Person B, Wexner S. Hemorrhoidal disease: A comprehensive review. *JACS, Collective review*. 2007; 1(1): 102-117.
9. Herold A. Differential diagnosis of hemorrhoidal disease. *Hautarzt*. 2020 Apr; 71(4): 269-274.
10. Riss S, Weisner AF, Schwameis K, Riss T, Mittlblock M, Steiner G. et al. The prevalence of hemorrhoids in adults. *Int J Colorectal Dis*. 2012 Feb; 27(2): 215-220.
11. Strate LL, Gralnek IM. Management of patients with acute lower gastrointestinal bleeding. *The American Journal of Gastroenterology*. 2016 Apr; 111(4): 459.
12. Afshar RI, Sadr MS, Strate LL, Martel M, Menard C, Barkun AN. The role of early colonoscopy in patients presenting with acute lower gastrointestinal bleeding: a systematic review and meta-analysis. *Ther Adv Gastroenterol*. 2018; 11(1756283X18757184)
13. Langebach MR, Schmidt J, Neumann J, Zirngibl H. Delay in treatment of colorectal cancer: multifactorial problem. *World J Surg*. 2003 Mar; 27(3): 304-308.
14. Gupta M, Holub J, Eisen G. Do indication and demographic for colonoscopy affect completion? A large national database evaluation. *Eur j GastroenterolHepatol*. 2010 May; 22(5): 10.1097
15. Corley DA, Jensen DC, Quinn V, Doubeni CA, Sauer GA, Leek J. Association between Time to colonoscopy after a positive fecal test result and risk of Colorectal cancer and cancer stage at diagnosis. *JAMA*. 2017 Apr 25; 317(16): 1631-1641.
16. Rees JC, Bevan R, Zimmerman-Fraedrich K, Rutter MD, Rex D, Dekker E. et al. Expert opinion and scientific evidence for colonoscopy key performance indicators. *GUT* 2016, Dec; 65(12): 2045-2060.
17. Rehman KU, Quareshi OM, Khokar NS, Hafgaat F, Salih M. Quality of colonoscopy and spectrum of Lower gastrointestinal disease as determined by colonoscopy. *Journal of the College of Physicians and Surgeons Pakistan* 2015; 25(7): 478-481.
18. Gimeno-Garcia AZ, Quintero E. Colonoscopy appropriateness: really needed or vast of time? *World J Gastrointest Endosc*. 2015 Feb 16; 7(2): 94-101.
19. Schwartz S, Shires GT, Spencer FC, *Principles of Surgery*, 6th edition, International edition, Mc Graw-Hill, Inc; 1194-1196; 1222-1223.
20. Stulfoher M. Kirurgija benignih bolesti anorektuma in: Kirurgija probavnog sustava. Medicinska naklada, Zagreb, 1999: 685-698.
21. Pedersen AF, Hansen RP, Vedsted P. Patient delay in colorectal cancer patients: associations with rectal bleeding and thoughts about cancer. *PlosOne*. 2013 Jul 22; 8(7).
22. Navaneethan U, Njei B, Venkatesh P, Sanaka RM. Timing of colonoscopy and outcomes in patients with lower gastrointestinal bleeding; a nationwide population-based study. *Gastrointest endosc*. 2014 Feb; 79(2): 297-306.
23. Gralnek JM, Fisher RTO, Holub J, Glen ME. The role of colonoscopy in evaluating hematochezia: Population based study in a large consortium of endoscopy practices. *gastrointestinal endoscopy*. 2013; 77(3): 410-418.
24. Rahman MM, Bhuiyon MH, Ferdaus AM, Mahmed R. Correlation between clinical diagnosis and Colonoscopic findings of patients presented with lower gastrointestinal bleeding. *Mymensingh Med J*. 2015 Apr; 24(2): 238-243.
25. Oluyemi A, Odeghe E, Adeniyi I. Colonoscopy findings in Lower gastrointestinal bleeding in Lagos: a comparative study based on age. *Niger J Clin Pract*. 2020 Dec; 23(12): 1656-1659.
26. Jovic T, Bosnjak - Latinovic O, Hadnadjev Lj, Damjanov D, Savic Ž, Orlic T. Acute Lower gastrointestinal bleeding. *Med pregl*. 2014 Nov-Dec; 67(11-12): 361-366.
27. Oakland K, Guy R, Uberoy R, Hogg R, Mortensen N, Murphy M et al. Acute lower gastrointestinal bleeding in the UK: patient characteristics, interventions and outcomes in the first nation wide audit. Multicenter study. *GUT*. 2018 Apr; (4): 654-662.
28. Delibegovic S, Krdžalić G, Pašić F. Hirurgija, Dobra knjiga, Sarajevo, Udruženje endoskopskih hirurga Bosne i Hercegovine, 2020: 606-610.
29. Rubini M, Ascanelli S. Classification and guidelines of hemorrhoidal disease: present and future. *World j Gastrointest Surg* 2019 Mar 27; 11(3): 117-121.
30. Hartley GC, Rectal Bleeding. *Aust Fam Physician*. 2000 Sep; 29(9): 829-833.
31. Offor RE, Amadi S. Hemoroidal disease: Predilection sites, pattern of presentation and treatment. *Ann Afr Med*. 2019 Jan-Mar; 18(1): 12-16.
32. Chen FW, Sundaram V, Chew TA, Ladabaum U. Advanced stage Colorectal cancer in persons younger than 50 years not associated with longer duration of symptoms or time to diagnosis. *Clingastroenterol Hepatol*. 2017 May; 15(5): 728-737.
33. Chait M. Lower gastrointestinal bleeding in the elderly. *World J Gastrointest Endosc*. 2010 May 16; 2950; 147-154.