DIAGNOSTIC YIELD OF COLONOSCOPY IN LOWER GASTROINTESTINAL BLEEDING IN MOSUL

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ABSTRACT

Background: Lower gastrointestinal bleeding is a common morbid condition that entails anxiety for the patient and represents a diagnostic challenge for clinicians. This study aimed to disclose varied causes of colorectal bleeding by colonoscopic examination in Mosul city, north of Iraq.

Methods: This is a cross-sectional retrospective study of (257) patients including174 males and 83 females, presented with lower gastrointestinal bleeding. All patients were subjected to colonoscopy examination in Al-Salam General Hospital in Mosul during a period of two years, from January 2018 to January 2020. Records of included patients were reviewed. Demographic, clinical, and endoscopic findings were collected and analyzed.

Results: Mean age of the patients was 45.4 ±17.7 years, age range 6-90 years. Main causes of lower gastrointestinal bleeding were hemorrhoids, inflammatory bowel disease, colon cancer, and polyps with frequency rates of 28.4%, 26.5%, 13.2%, and 10.9% respectively. Diverticula and vascular malformations comprised 1.9% and 0.4% respectively. Colonoscopy identified colorectal lesions in 92.2% of involved patients.

Conclusions: Majority of lesions causing lower gastrointestinal bleeding can be diagnosed by colonoscopic examination. In Mosul, hemorrhoids, inflammatory bowel disease, and neoplasms were the dominant causes, whereas diverticula and vascular malformations were rare.

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Keywords: Colonoscopy, Hemorrhoids, Lower gastrointestinal bleeding.

Traditional definition of lower gastrointestinal bleeding (LGIB) is bleeding that emanates from lesions distal to the ligament of Treitz[1]. It should be differentiated from small intestinal bleeding, and the new proposal is that it represents bleeding distal to the ileocecal valve[2]. Anatomically it defines bleeding from the colon and anorectal region. The incidence of LGIB is approximately 36/1,00,000 population/year[3]. The mortality rate ranges from 2% to 4%[4]. The bleeding might be acute of less than three days duration or chronic occurring over several days or more[5]. The majority of acute LGIB (80%-85%) stops spontaneously[6]. LGIB lesions are commoner in the elderly and bring about serious consequences due to aging, associated comorbidities, and use of drugs[7]. The incidence rate of causes of LGIB is variable across the world, depending on the degree of civilization of studied populations, geographic location, study design, selection bias, and access to endoscopic examination according to guidelines. Generally, causes of LGIB include (diverticula, ischemic colitis, angiodysplasia, hemorrhoids, colorectal neoplasia, Inflammatory bowel disease

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(IBD), infectious colitis, rectal ulcer, drugs, and postpolypectomy)[3]. The main methods of initial diagnosis of LGIB lesions are endoscopic examination, but occasionally when bleeding is massive, source unidentified or colonoscopy is difficult, then contrast angiography, CT angiography, radionuclide scintigraphy or capsule endoscopy are needed to localize the bleeding lesion. The diagnostic accuracy of colonoscopy is 72% to 86%[8]. Diagnostic yield of colonoscopy reaches maximum when done within the first 12-24 hours of admission with the added benefit of shorter hospital stay[9]. Utility of colonoscopy extends beyond diagnosis to therapy that includes cessation of bleeding, cure of certain lesions and some other palliative procedures. In the hands of expert endoscopist, colonoscopy is safe and carries small rate of morbidity and mortality. Though the diagnostic yield of colonoscopy is high, about 10% of LGIB sources are not identified[10]. The aim of the current study is to disclose causes of LGIB involving the colorectum through colonoscopy examination and elucidate demographic features of involved patients. The results were compared with other studies from developed and developing countries.

METHODS

A total of 257 patients presented with LGIB (174 males, 83 females) were included in the present study. All patients were subjected to colonoscopy examination performed by expert gastroenterologist in Al-Salam general hospital in Mosul city (north of Iraq), during a period of 2 years from January 2018 to January 2020. Data were collected from the records of the patients, which included age, gender, date of examination, clinical information, and details of endoscopic examination. The source of the patients were surgical and medical hospital consultation clinics, hospital inpatient wards, primary care health centers, and private clinics. Inclusion criteria were patients presented with hematochezia of variable durations (few days or more), bloody diarrhea, melena, occult blood in the stool or anemia. Patients with upper gastrointestinal bleeding, small bowel bleeding, diarrhea due to infections, and colonic operations were excluded from the study. Resuscitation was offered to patients with hemodynamic instability prior to endoscopy. Bowel preparation was done by polyethylene glycol-based solution (PEG 3350, 2-4 liters prepared) taken orally the night before morning examination. Adequacy of bowel preparation was gauged according to Boston criteria[11]. Occasionally urgent colonoscopy was performed without preparation or after a rapid purge. Pre-medications were used as conscious sedation in the form of i.v midazolam 1-5 mg/ml or i.v diazepam 2-5 mg/ml, and 25-50 mg i.v meperidine. Olympus white light colonoscope (Japan, generation CF-P 405) with video scope (330 IF) were used for examination. During colonoscopy, if more than one lesion were encountered, then the bleeding lesion was regarded as the culprit lesion; on the other hand, if no bleeding source was identified, then any lesion detected was presumed to be the source of bleeding. Cecal intubation or terminal ileal intubation, for a proportion of patients, was a prerequisite for complete colonoscopy examination. Colonoscopy

withdrawal time averaged between six to ten minutes. Biopsies were taken to confirm diagnosis of neoplasia, colitis or rectal ulcers. Histopathological reports of non-specific colitis denote findings that does not fit classical description of ulcerative colitis (UC) or Crohn's disease (CD).

Data were analyzed using statistical package for social sciences (SPSS, version 24, USA). Descriptive statistics were used to calculate the mean, median, range, percentage, standard deviation (SD), and P value wherever appropriate. Level of significance for P value was set at 0.05. Tables where displayed to clarify demonstration.

The present study was approved by Ninevah Health Directorate and Medical Ethical Committee of Ninevah University (license number 77 on July 25, 2019). All patients agreed to sign a written document form prior to endoscopic examination.

RESULTS

A total of 257 patients (male 174, female 83) were included. Male/female ratio was 2.1:1, age range 6-90 years, with a mean age of 45.4 (SD ±17.7) years. Causes of LGIB are listed in (Table 1).

Table 1. Causes bleeding of colorectal lesions

Lesion	Male N=174	Female N=83	Total N= 257 %
Hemorrhoids	56	17	73 (28.4%)
Inflammatory bowel disease	UC 38 CD 2	UC 25 CD 3	68 (26.5%)
Colon cancer	17	17	34 (13.2%)
Polyp	22	6	28 (10.9%)
Non-specific colitis	16	7	23 (9%)
Rectal ulcer	4	1	5 (1.9%)
Diverticula	5	--	5 (1.9%)
Telangiectasia	--	1	1 (0.4%)
Unknown	14	6	20 (7.8%)

Abbreviations: UC, ulcerative colitis; CD, Crohn's disease

Hemorrhoids headed the list of causes (73/257, 28.4%), followed by IBD (68/257, 26.5%, P=0.24). Hemorrhoids affected mainly males (male: female, 56/17, 3.3:1, p<0.001), and age group 40-49 years (22/73, 30.1%) (Table 2).

Table 2: Age group distribution of the most common colorectal bleeding lesions

Age groups (years)	Hemorrhoids N=73 %	IBD N=68 %	Colon cancer N=34 %	Polyp N=28 %
1-9	-- --	1 (1.5%)	-- --	3 (10.7%)
10-19	1 (1.4%)	5 (7.4%)	-- --	4 (14.3%)
20-29	3 (4.1%)	19 (27.9%)	-- --	1 (3.6%)
30-39	14 (19.2%)	14 (20.6%)	2 (5.9%)	2 (7.1%)
40-49	22 (30.1%)	11 (16.2%)	6 (17.6%)	6 (21.4%)
50-59	17 (23.3%)	13 (19.1%)	10 (29.4%)	4 (14.3%)
60-69	10 (13.7%)	4 (5.9%)	9 (26.5%)	5 (17.9%)
70-79	3 (4.1%)	1 (1.5%)	4 (11.8%)	3 (10.7%)
80-89	2 (2.7%)	-- --	3 (8.8%)	-- --
90-99	1 (1.4%)	-- --	-- --	-- --

Abbreviations: IBD, inflammatory bowel disease

The main age group affected by IBD was 20-29 years (19/68, 27.9%, p<0.003) (Table 2). Male: female ratio in UC was (38/25, 1.5:1, p<0.03). Patients with UC markedly outnumbered CD (UC: CD, 63/5, 12.6:1, P<0.001). Initial colonoscopy revealed proctitis as the dominant lesion in UC (30/63, 47.6%, P<0.046) (Table 3).

Table 3. Extent of ulcerative colitis

Extent	Number (63)	Frequency (%)
Proctitis	30	(47.6%)
Left sided colitis	24	(38.1%)
Extensive colitis	9	(14.3%)

Colon cancer afflicted mainly ages above 50 years (26/34, 76.5%, p<0.001) (Table 2). Males and females were equally affected (17:17, 1:1). The main locations of colon cancer were the rectum and sigmoid (27/34, 79.4%) (Table 4).

Table 4. Site of colon cancer and polyps

Site	Colon cancer N=34 (%)	Colorectal polyps N =28 (%)
Rectum	15 (44.1%)	13 (46.4%)
Sigmoid	12 (35.3%)	9 (32.1%)
Descending colon	3 (8.8%)	3 (10.7%)
Transverse colon	2 (5.9%)	1 (3.6%)
Ascending colon	1 (2.9%)	2 (7.1%)
Cecum	1 (2.9%)	-- --

Colorectal polyps below 50 years was detected in (16/28, 57.1%, p=0.07) (Table 2). Males affection outnumbered females (22 male versus six female, p<0.001) (Table 1). Majority of polyps were located in the rectum and sigmoid colon (22/28, 78.6%, P<0.001) (Table 4).

Five patients with diverticular disease (5/257, 1.9%) were detected and affected age range of 51-80 years. A 48-year-old male patient had two rectal ulcers. One female patient aged 53 years presented with chronic anemia, colonoscopy revealed multiple colonic telangiectasia. Colonoscopy detected 92.2% of colorectal lesions associated with LGIB.

DISCUSSION

Colonoscopy has been established to be the best modality for detection of the source of LGIB. However, unlike upper gastrointestinal endoscopy, colonoscopy requires proper colonic preparation to detect lesions. Furthermore, the anatomic complexity of the colon renders colonoscopy examination an arduous procedure for the endoscopist and the patient too. In the present study, the mean age of affected patients was below 50 years, whereas in Europe and North America, LGIB afflicts mainly elderly people 7. The proportion of elderly age groups is higher in the developed nations compared with populations in most areas of Asia and Africa. Sex ratio is variable across different studies. Our results showed males were twicely affected compared to females. Results of studies regarding the most common causes of LGIB are disparate. In many developing countries hemorrhoids is a prominent cause of LGIB 12, 13. Even a large study by Gralnek from the United States, found that hemorrhoids were responsible for up to 64.4% of hematochezia14. If the present

study was done exclusively for inpatients, in whom bleeding is more severe, then the frequency of causes of LGIB will be different, as most patients with bleeding due to hemorrhoids are managed in the outpatient clinics. There is a recent trend of increasing incidence of IBD in Asia, possibly ascribed to modernization of life style, but it is still lower than Europe or North America15. IBD traditionally affects younger age groups. A study from Portugal by Goncalves et al, involving 310 patients with UC, found that (207/310, 66.8%) of patients were below 40 years age16. Gender ratio in IBD are variable across the world. In most autoimmune diseases female affection predominates, whereas in IBD this trend is not always true17. In the present study males affected by UC exceeded females (38 male versus 25 female, 38/63, 60.3%, $p<0.003$). In the west sex affection in UC is nearly equal18. Iraq is an Asian country in which prevalence of UC is much higher than CD, though this difference is narrowing in some areas of Asia 19. The present study showed that UC is mainly confined to the rectum and left colon, which is consistent with the characteristic location of UC based on Montreal classification20. According to population-based studies, 30-60% of patients with UC at presentation have proctitis; 16-45% left sided colitis, and 14-35% pancolitis 21. A subset of colitis that does not fit diagnosis of either UC or CD may be encountered; such non-specific colitis is now termed (unclassified or indeterminate colitis), with frequency of up to 15% 22. This sort of colitis is either a separate entity or a stage in evolution of classical IBD. Criteria that are more stringent are awaited for characterization of this entity of colitis. Bleeding from colon cancer is common, manifested mainly as anemia and occult blood in the stool, or less commonly as melena or hematochezia 23. Colon cancer is more prevalent in the aged populations; however, recent reports showed increasing incidence in patients below 50 years age 24. The incidence of such tumors are higher in male sex 25. This malignancy has a predilection to involve mainly the rectum and sigmoid. Colorectal polyps increase in frequency with advancing age, are usually symptomless and commonly present with LGIB; they are more common in males, and mainly involve the distal colon26. Polyps are also a common cause of LGIB during childhood 27. Diverticular disease is uncommon in most parts of Asia and it is the main cause of LGIB in Europe and North America with incidence of 15-48% 2, 28. Angiodysplasia is a frequent cause of LGIB particularly in the aged populations; it is responsible for 5%-10% of LGIB in adults in the west 2. Angiodysplasia is a less frequent cause of LGIB in many Asian countries 29. In the developed societies, diverticula and angiodysplasia commonly affect elderly populations in whom vascular degeneration (linked to angiodysplasia) and constipation (linked to diverticula) are more prevalent 7. In the developing nations, younger age people are affected by LGIB and their diet contain abundance of fibers, which may partly explain the lower prevalence of angiodysplasia and diverticula.

The present study included inpatient and outpatient sample source with different age groups. It is limited by being a retrospective single hospital-based study

that included a relatively small number of patients. Larger prospective studies from multiple centers across the country are awaited to attain more accurate results.

In conclusion, colonoscopy carries a high diagnostic yield in initial detection of colorectal bleeding lesions. In the current study, major causes of LGIB were hemorrhoids, IBD, and neoplasms, whereas diverticula and vascular malformations were rare. The affected ages are younger compared to reports from the west.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest.

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الخلاصة

الجدوى التشخيصية لمنظار القولون في حالات النزف من القناة المعدية المعوية السفلى في مدينة الموصل

الخلفية والأهداف: إن النزف الدموي من القناة المعدية المعوية السفلى هو حالة شائعة وتسبب القلق لدى المصاب وتمثل تحدي تشخيصي للطبيب. تهدف هذه الدراسة الى معرفة أسباب هذا النزف عن طريق إجراء الفحص بواسطة منظار القولون لعينة من مرضى مدينة الموصل.

الأساليب: هذه دراسة مستعرضة بأثر رجعي شملت (257) مريضا لديهم اعراض نزف من القناة المعدية المعوية السفلى. تكونت العينة من (174) ذكر و(83) انثى تم فحصهم بمنظار القولون في مستشفى السلام التعليمي في مدينة الموصل خلال الفترة من كانون الثاني 2018 ولغاية كانون الثاني 2020. تم جمع وتحليل بيانات المرضى والتي تخص الحالة السكانية والسريرية ونتائج فحص المنظار.

النتائج: كان معدل اعمار المرضى 45.4 ± 17.7 سنة، وتراوحت بين 6–90 سنة. الأسباب الرئيسية للنزف من القولون والمستقيم كانت البواسير بنسبة 28.4 %، ومرض الأمعاء الالتهابي 26.5%، وسرطان القولون 13.2%، والزوائد اللحمية 10.9%. اما النزف من رتاج القولون وتشوه الاوعية الدموية فكان نادرا بنسبة 1.9%، 0.4% على التوالي. تم تشخيص 92.2% من حالات النزف باستعمال منظار القولون.

الاستنتاجات: إن غالبية أسباب النزف الدموي من القناة المعدية المعوية السفلى بالإمكان تشخيصها بواسطة منظار القولون. كانت الأسباب الرئيسية لهذا النزف في مدينة الموصل هي البواسير ومرض الأمعاء الالتهابي والاورام بينما شكل النزف من رتاج القولون وتشوه الاوعية الدموية نسبة نادرة.