ORIGINAL ARTICLE

Clinical Profile and Endoscopic Findings in Patients Undergoing Colonoscopy: A Single Center Study

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Abstract

Background: ***Colonoscopy is an invasive yet safe and efficient procedure utilized for both diagnostic and therapeutic purposes in the detection and management of illnesses affecting the rectum, colon, and terminal ileum. Direct visualization makes it the preferred method for investigating colonic pathology.***

Aim: ***To evaluate the clinical profiles and endoscopic outcomes of cases of colonoscopy.***

Patients and methods: ***This was a prospective cross-sectional investigation involved 201 cases who were indicated for colonoscopy at endoscopy unit, Internal Medicine Department in Al-Azhar University hospitals.***

Results: ***The most frequent indication was bleeding per rectum, accounting for 22.9% of cases, followed by chronic abdominal pain (18.9%) and constipation (18.4%). According to Endoscopic findings, piles and polyps were among the most common findings, accounting for 17.9% of cases, while 2.0% had angiodysplasia, 5.5% had diverticulosis, and 14.9% had erosions. Masses were found in 3.0%, terminal ileum nodularity in 4.0% and ulcers were observed in 11.9% of cases. 22.9% had normal findings. The results highlight the correlation between specific clinical symptoms and endoscopic findings, aiding in the identification and management of colorectal pathology.***

Conclusion: ***The study highlighted the importance of colonoscopy in diagnosing conditions like inflammatory bowel disease (IBD), colorectal cancer (CRC), and adenomatous polyps. It also emphasized the role of early detection and surveillance, particularly in cases with red flag symptoms like rectal bleeding. It also calls for further research to explore the underlying factors influencing colonoscopy referrals and outcomes in different populations.***

Keywords: Colonoscopy; clinical profiles; Bleeding per rectum

1. Introduction

Colonoscopy is an invasive yet safe and efficient procedure utilized for both diagnostic and therapeutic purposes in the detection and management of illnesses affecting the rectum, colon, and terminal ileum. Direct visualization is the preferred method for investigating colonic pathology.[1]

Colonoscopy can be performed for various reasons, including investigating gastrointestinal (GI) bleeding, abdominal pain, unexplained alterations in bowel habits, suspicion of malignancy, or abnormalities detected on abdominal ultrasound, barium enema, or computed tomography (CT) scan.[2]

Indications for colonoscopy involve screening or surveillance for colorectal cancer and assessment of colonic or terminal ileum pathologies. Therapeutic interventions involve polypectomy, stricture dilation, stent placement, colonic decompression, and foreign body removal.[3]

Polypectomy performed throughout colonoscopy has been demonstrated to reduce the frequency of colorectal cancer and its related mortality. A mucosal biopsy for diagnostic purposes and minimal invasive therapeutic procedures may be performed throughout this procedure. Cases of occult gastrointestinal (GI) bleeding necessitate colonoscopy to rule out lower GI tract diseases.[4]

The choice to conduct a colonoscopy must take into account the indications and contraindications for the procedure, the associated risks, and the cost.[5]

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Despite its advantages, colonoscopy isn't routinely conducted. Many cases don't undergo colonoscopy, even when needed, because of the unavailability of tools, experienced personnel, and the procedure's discomfort and invasiveness. The procedure necessitates sedation, hence restricting its utility.[6]

Colonoscopy is utilized for diagnosing acute or chronic pathology; nevertheless, some contraindications must be taken into account while determining whether to proceed with the procedure. A cooperative case is essential for the execution of any procedure, particularly a colonoscopy. Bowel preparation may be uncomfortable and challenging to endure if the patient lacks motivation to continue. Furthermore, active inflammation must be taken into account while determining whether to have a colonoscopy.[7]

This may involve inflammation resulting from toxic megacolon, fulminant colitis, ulcerative colitis, Crohn flares, diverticulitis, and others. Colonoscopy elevates colonic dilatation and intraluminal pressure, hence increasing the risk of injury to friable and inflamed tissues, as well as increasing the possibility of perforation. This should be taken into account while determining whether to proceed with a colonoscopy. Generally, if a colonoscopy can wait until the inflammation diminishes, this approach must be used. Absolute contraindications to colonoscopy involve patient refusal, recent myocardial infarction, hemodynamic instability, peritonitis, recent surgery involving colonic anastomosis, or bowel injury and repair. Typically, cases must postpone colonoscopy for a minimum of six weeks following acute episodes.[8]

This study aimed to evaluate the clinical profiles and endoscopic outcomes of cases of colonoscopy.

2. Patients and methods

This was a prospective cross-sectional investigation involved 201 cases who have been indicated for colonoscopy at endoscopy unit, Internal Medicine Department in Al-Azhar University hospitals.

Inclusion criteria: Cases indicated for colonoscopy and age of more than 18 years.

Exclusion criteria: Case not willing to participate in the investigation, and case not fit for colonoscopy.

Methods:

All patients were subjected to: Complete history taking, physical examination, and investigational studies:

Colonoscopy

All cases have been administered a standardized bowel preparation consisting of a low-residue diet for forty-eight hours, followed by clear fluids only for twenty-four hours, and a polyethylene glycol-based purgative has been provided. The quality of bowel preparation has been evaluated utilizing the Boston Bowel Preparation Score, which ranges from zero to nine points across three segments of the colon: right, transverse, and left. Each segment is rated from zero to three based on the degree of soiling, with a total score of less than five indicating poor preparation, a score of six to seven indicating good preparation, and a score greater than eight indicating very good preparation. The endoscopist gained consent for the colonoscopy from the patient in the examining room. A sedation protocol has been developed. In every case, intravenous access has been achieved utilizing a standard cannula. Full and ongoing follow-up has been conducted throughout the procedure. Colonoscopies have been conducted by a competent endoscopist. A standardized data collection form has been completed for every case. The documented data encompassed all technical and medical details. Recorded medical information involved demographic data (gender and age), indication for the colonoscopy, presence of comorbidities, endoscopic outcomes, and histology follow-up. Documented quality variables involved cecal intubation, criteria for cecal intubation, reasons for unsuccessful and terminated colonoscopies, withdrawal period throughout negative colonoscopies, sedation protocols, quality of bowel preparation, and diagnostic colorectal biopsies when warranted.

All the following were documented:

Quality and type of preparation, Extent of endoscopic examination, Reason of incomplete procedure, Withdrawal time, any recorded complications, using abdominal compression or change position, Endoscopic findings and diagnosis and Documentation of biopsy result if taken.

Ethical Consideration

Informed consent has been acquired from cases prior to enrollment in the investigation. Approval from the Research Ethics Committee at Al-Azhar Faculty of Medicine has been obtained.

3. Results

Table 1 demonstrates that 52.7% was female, with an average age of 42.7 years. Smoking, junk food consumption, and meat-rich diets were reported by 23.9%, 28.9%, and 7%, respectively. Medical histories included 3% with colorectal cancer and 10% with inflammatory bowel disease. Common comorbidities were diabetes (15.9%) and hypertension (16.4%). NSAID and PPI use was reported by 28.9% and 39.8%,

respectively.

Table 1. Baseline data of the studied cases who underwent colonoscopy

CASES' DATA	FREQUENCY (N=201)	%
DEMOGRAPHY		
FEMALE	106	52.7
MALE	95	47.3
AGE, MEAN ± SD	42.71	± 15.33
SPECIAL HABITS		
SMOKING	48	23.9
MEAT-RICH DIET	14	7
JUNK FOOD	58	28.9
RELEVANT HISTORY		
HISTORY OF CRC	6	3
FAMILY HISTORY OF CRC	4	2
HISTORY OF IBD	20	10
FAMILY HISTORY OF IBD	1	0.5
COMORBIDITIES		
DM	32	15.9
HTN	33	16.4
IHD	10	5
CKD	2	1
DRUG HISTORY		
NSAIDS	58	28.9
PPIS	80	39.8

Table 2 demonstrates that 100% of cases had excellent bowel preparation (median score 9). Cecal intubation was achieved in 86%, and terminal ileum intubation in 61.7%. The adenoma detection rate was 6.5%, with a median withdrawal time of 8 minutes. Procedural adjustments including abdominal compression and position changes, were performed in 42.8% and 7% of cases, respectively.

Table 2. Colonoscopy procedure

COLONOSCOPY PROCEDURE	FREQUENCY (N=201)	%
DOCUMENTATION OF THE QUALITY OF PREPARATION USING BOSTON BOWEL PREPARATION, NO (%)	201	100
QUALITY OF PREPARATION USING (BBP), MEDIAN (IQR)	9	6 – 9
EXTENT OF EXAMINATION, NO (%)		
CECAL INTUBATION	173	86
TERMINAL ILEUM INTUBATION	124	61.7
ADENOMA DETECTION RATE (NOT IN A CASE FOR SCREENING OF COLON CANCER), NO (%)	13	6.5
WITHDRAWAL TIME, MEDIAN (IQR)	8	7 – 9
ABDOMINAL COMPRESSION, NO (%)	86	42.8
CHANGE OF POSITION, NO (%)	14	7

Table 3 demonstrates that according to Endoscopic findings, 2.0% had angiodysplasia, 5.5% had diverticulosis, and 14.9% had erosions. Masses were found in 3.0%, terminal ileum nodularity in 4.0%, and piles in 17.9%. Polyps and ulcers were each observed in 17.9% and 11.9% of cases, respectively. 22.9% had normal findings.

Table 3. Endoscopic findings

ENDOSCOPIC FINDINGS	FREQUENCY (N=201)	%
ANGIODYSPLASIA	4	2.0
DIVERTICULOSIS	11	5.5
EROSIONS	30	14.9
MASS	6	3.0
TERMINAL ILEUM NODULARITY	8	4.0
PILES	36	17.9
POLYPS	36	17.9
ULCERS	24	11.9
NORMAL	46	22.9

Table 4 demonstrates that an insignificant correlation has been observed among various symptoms and endoscopic findings.

Table 4. Correlation of symptoms with endoscopic findings

ENDOSCOPIC FINDINGS	BLEEDING PER RECTUM		CHRONIC ABDOMINAL PAIN		CONSTIPATION		DIARRHEA		FOLLOW-UP (IBD, CRC, SRU, COLONIC POLYPS)		IDA		SEARCHING FOR MALIGNANCY		P VALUE
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	0.08
ANGIODYSPLASIA	1	2.2	1	2.6	1	2.7	0	0.0	0	0.0	1	4.2	0	0.0	
DIVERTICULOSIS	2	4.3	3	7.9	3	8.1	0	0.0	0	0.0	0	0.0	3	23.1	

EROSIONS	7	15.2	6	15.8	4	10.8	4	23.5	6	23.1	2	8.3	1	7.7
MASS	1	2.2	0	0.0	2	5.4	0	0.0	2	7.7	1	4.2	0	0.0
TERMINAL ILEUM NODULARITY	1	2.2	3	7.9	0	0.0	1	5.9	1	3.8	1	4.2	1	7.7
NORMAL	4	8.7	12	31.6	6	16.2	4	23.5	7	26.9	9	37.5	4	30.8
PILES	15	32.6	3	7.9	8	21.6	2	11.8	1	3.8	5	20.8	2	15.4
POLYPS	7	15.2	8	21.1	9	24.3	2	11.8	3	11.5	5	20.8	2	15.4
ULCERS	8	17.4	2	5.3	4	10.8	4	23.5	6	23.1	0	0.0	0	0.0
TOTAL	46	100	38	100	37	100	17	100	26	100	24	100	13	100

CRC, colorectal carcinoma; IBD, inflammatory bowel disease; IDA, iron deficiency anemia; SRU, solitary rectal Ulcers. Chi-square with the Monte Carlo method was used. *: Significant p-value ≤ 0.05.

Table 5 demonstrates that there were highly significant association between the endoscopic findings and the histopathological results.

Table 5. Correlation between endoscopic findings and histopathology

HISTOPATHOLOGY	ANGIODYSPLASIA		DIVERTICULOSIS		EROSIONS		MASS		TERMINAL ILEUM NODULARITY		ULCERS		PILES		POLYPS		NORMAL		P-VALUE
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
NO BIOPSY TAKEN	4	100	11	100	3	10	1	17	1	13	6	25	36	100	13	36	46	100	<0.001*
ADENOCARCINOMA	0	0	0	0	0	0	3	50	0	0	1	4	0	0	0	0	0	0	
ADENOMA	0	0	0	0	0	0	0	0	0	0	1	4	0	0	12	33	0	0	
CD	0	0	0	0	11	37	0	0	4	50	4	17	0	0	0	0	0	0	
HYPERPLASIA	0	0	0	0	1	3	0	0	2	25	0	0	0	0	8	22	0	0	
NONSPECIFIC COLITIS OR ILEITIS	0	0	0	0	12	40	2	33	1	12	2	8	0	0	2	6	0	0	
SRU SYNDROME	0	0	0	0	1	3	0	0	0	0	2	8	0	0	1	3	0	0	
UC	0	0	0	0	2	7	0	0	0	0	8	33	0	0	0	0	0	0	
TOTAL	4	100	11	100	30	100	6	100	8	100	24	100	36	100	36	100	46	100	

CD, Crohn's disease; UC, ulcerative colitis; Chi-square with the Monte Carlo method was used. *: Significant p-value ≤ 0.05.

The most common indications were chronic abdominal pain (27.6%), diarrhea (24.1%), and bleeding per rectum (20.7%), with (10.3%) undergoing colonoscopy for follow-up or screening for malignancy (3.4%). Endoscopic findings revealed erosions in 44.8% of cases, ulcers in 41.4%, and terminal ileum nodularity in 13.8%. The mean age of the IBD cases was 32.66 years with a standard deviation of 12.94.

Table 6. Characteristics of IBD cases

CHARACTERISTICS OF IBD CASES	FREQUENCY (N =29)	%
INDICATION FOR COLONOSCOPY		
BLEEDING PER RECTUM	6	20.7
CHRONIC ABDOMINAL PAIN	8	27.6
CONSTIPATION	1	3.4
DIARRHEA	7	24.1
FOLLOW-UP (IBD, CRC, SRU, COLONIC POLYPS)	3	10.3
IDA	3	10.3
SCREENING FOR MALIGNANCY	1	3.4
ENDOSCOPIC FINDINGS		
EROSIONS	13	44.8
TERMINAL ILEUM NODULARITY	4	13.8
ULCERS	12	41.4
AGE, MEAN SD	32.66	12.94

CRC, colorectal carcinoma; IBD, inflammatory bowel disease; IDA, iron deficiency anemia; SRU, solitary rectal Ulcers

4. Discussion

Regarding gender distribution, slightly more than half of the cases in the present investigation were female (52.7%), with a mean age of 42.71 years (±15.33). These findings align with those reported by Musa et al.,[9] who found that 53.3% of cases undergoing colonoscopy were female, with a mean age of 56.3 (±15.5) years.

With regard to the extent of the examination,

terminal ileum intubation was achieved in 61.7% of cases, while cecal intubation occurred in 24.4%. The adenoma detection rate, excluding those screened for colon cancer, was 6.5%. The median withdrawal time was 8 minutes (IQR: 7–9), demonstrating adherence to established quality standards. In contrast, Teshome et al.,[10] found that colonoscopy reached the terminal ileum in only 12.7% (77) of cases. In the majority of cases, 63.3% (385), the examination was conducted up to the ileocecal valve. In the remaining cases, the procedure was discontinued at various levels: hepatic flexure (4.3%), rectum (4.3%), ascending colon (3.8%), sigmoid colon (3.3%), splenic flexure (3%), and descending colon (0.7%).

Regarding colonoscopic findings, normal findings were the most frequent in the current study, occurring in 22.9% of cases, underscoring the diagnostic value of colonoscopy in ruling out pathology. Piles and polyps were each identified in 17.9% of cases, while erosions were observed in 14.9%. Ulcers were noted in 11.9%, and diverticulosis was found in 5.5% of cases. Less common findings included terminal ileum nodularity (4.0%), masses (3.0%), and angiodysplasia (2.0%). These findings highlight the broad diagnostic utility of colonoscopy, which is capable of detecting a wide range of conditions, from benign abnormalities to potentially significant lesions.

In comparison, Elbadry et al.,[11] found that inflammatory bowel disease (IBD) and hemorrhoids were the most frequent diagnoses, reported in 22.34% and 21.86% of cases, respectively. Normal findings were observed in 18.21% of their cases, which may reflect regional variations in disease prevalence, particularly with the higher incidence of hemorrhoids.

The study examined the correlation between clinical indications and endoscopic findings in 201 colonoscopy cases, with statistical significance evaluated (P value = 0.08). Angiodysplasia was rare but more frequent in cases with iron deficiency anemia (4.2%) and constipation (2.7%). Diverticulosis was common in those undergoing colonoscopy for malignancy screening (23.1%), chronic abdominal pain (7.9%), and constipation (8.1%). Erosions were frequently found in cases with diarrhea (23.5%) and those undergoing follow-up for inflammatory bowel disease (IBD), colorectal cancer (CRC), solitary rectal ulcer (SRU), or polyps (23.1%). Masses were mostly identified in follow-up cases (7.7%) and constipation (5.4%). Terminal ileum nodularity appeared most often in cases with chronic abdominal pain (7.9%). Normal findings were most frequent in follow-up cases (26.9%) and malignancy screening (30.8%). Piles (hemorrhoids) were notably associated with bleeding per rectum (32.6%) and constipation (21.6%). Polyps were more prevalent in cases with constipation (24.3%) and chronic abdominal pain (21.1%). Ulcers were more common in diarrhea (23.5%) and follow-up cases (23.1%).

These findings emphasize the diagnostic and surveillance role of colonoscopy, particularly in ruling out malignancy and monitoring chronic gastrointestinal conditions like IBD and CRC. The results highlight the correlation between specific clinical symptoms and endoscopic findings, aiding in the identification and management of colorectal pathology.

Supporting evidence from Moussa et al.,[12] showed a statistically significant correlation among clinical symptoms and pathological diagnosis in cases with lower gastrointestinal symptoms ($p < 0.001$).

The study demonstrates significant correlations between endoscopic findings and histopathology, emphasizing the importance of biopsies in guiding clinical decisions ($p < 0.001$). Conditions like angiodysplasia, diverticulosis, piles, and normal findings did not require biopsies, reflecting their benign nature. Adenocarcinoma was found in 50% of cases with masses, while polyps were linked to adenomas in 33%, indicating their premalignant potential. Crohn's disease was strongly associated with terminal ileum nodularity (50%) and erosions (37%). Hyperplastic changes were found in polyps (22%) and terminal ileum nodularity (25%), suggesting benign proliferative processes. Nonspecific colitis or ileitis was seen in cases with erosions (40%) and terminal ileum nodularity (12%). Ulcers were associated with ulcerative colitis (33%).

These findings underscore the critical role of both endoscopy and histopathology in diagnosing gastrointestinal conditions, with endoscopic findings guiding targeted biopsies for more accurate diagnoses. Supporting these findings, Shrestha et al.,[13] demonstrated a strong correlation between colonoscopic and histopathological findings. Similarly, Irani et al.,[14] confirmed a very strong correlation, further validating the integration of colonoscopic and histopathological data for improved diagnostic accuracy.

The study of 29 IBD cases revealed diverse symptoms and endoscopic findings. The most common indications for colonoscopy were chronic abdominal pain (27.6%) and diarrhea (24.1%), typical of IBD. Other indications included bleeding per rectum (20.7%), follow-up for IBD, CRC, SRU, or colonic polyps (10.3%), and iron deficiency anemia (IDA) (10.3%). Fewer cases were screened for malignancy (3.4%) or constipation (3.4%). Endoscopic findings showed that erosions (44.8%) and ulcers (41.4%) were most prevalent, reflecting the inflammatory

nature of IBD. Terminal ileum nodularity was observed in 13.8%, indicating involvement of the terminal ileum. The mean age of the cases was 32.66 years, suggesting a relatively young case population.

Supporting studies provide further insights into IBD diagnoses and colonoscopy indications. Bhattarai et al.,[15] detected IBD in 52 out of 1,248 cases (4.16%), with a mean age of diagnosis at 39.67 ± 14.53 years. UC has been diagnosed in 82.7% of cases, and CD in 17.3%.

Bezzio et al.,[16] demonstrated that the most frequent indications for colonoscopy in IBD cases were disease flare-ups (60.3% for CD, 46.0% for UC), with mucosal healing assessment (34.9% for CD, 12.7% for UC) and surveillance (4.8% for CD, 41.3% for UC) also significant.

4. Conclusion

The study's findings underscore the need for tailored diagnostic approaches and further research to better understand colonoscopy outcomes in different populations. Overall, the study contributes valuable insights into the clinical and endoscopic profiles of Egyptian cases, highlighting the role of colonoscopy as an essential tool for both diagnosis and surveillance of colorectal conditions. It also calls for further research to explore the underlying factors influencing colonoscopy referrals and outcomes in different populations.

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