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ORIGINAL ARTICLE

Indications of Colonoscopy and Their Diagnostic Yield

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ABSTRACT

Aims: To look for common indications and gastrointestinal pathologies observed on colonoscopy and to assess its diagnostic yield with respect to different clinical indications.

Study design: Observational cross-sectional study

Place and duration of study: Department of Medicine, Rehman Medical Institute from 1st January 2018 to 31st March 2019

Methodology: Five hundred and seventy three patients referred for colonoscopy were included. The demographic profile, indication of colonoscopy and colonoscopy findings were noted.

Results: There were 231 **(**40.3%) males and 342 (59.7%) females with mean age 42.32±17.51 years. Bleed per rectum was most common indication noted in 284 (49.6%) followed by altered bowel habits 125 (21.8%) cases. Two hundred and fifty two (44%) colonoscopies were normal. One hundred and seventy three (30.2%) revealed significant lesions and 148 (25.8%) lesions were insignificant. Internal hemorrhoids were observed in 130 (22.7%) followed by colitis in 54 (9.4%). Abnormal computerized tomography abdomen revealed significant lesions in 62.2% of patients. Chronic diarrhea followed by constipation, altered bowel habits and iron deficiency anemia (IDA) showed 34.5%, 25.7%, 17.6% and <10% significant lesions respectively.

Conclusion: Rectal bleed was the most common indication followed by altered bowel habits. Most common colonoscopy findings were hemorrhoids followed by colitis and abnormal growth. Abnormal computerized tomography abdomen gave the best diagnostic yield for colonoscopy.

Keywords: Colonoscopy, Indications, Diagnostic yield

INTRODUCTION

Lower gastrointestinal (GI) diseases constitute a broad spectrum of diseases ranging from benign polyps, infectious and inflammatory pathologies to autoimmune disease and malignancies. Ileitis, colitis, diverticula, infiltrative lesions, erosions, ulcers, angiodysplasia, inflammatory bowel disease (IBD), familial adenomatous polyposis (FAP), amebiasis, polyps, cancer, fissures, fistulas, hemorrhoids and rectal varices are some of the commonly encountered Lower GI pathologies.**[1]**

Diseases of the lower gastrointestinal tract are a significant cause of mortality and morbidity worldwide, with colorectal carcinoma accounting for more than half of all GI tract malignancies; therefore making it the main cause of GI related mortality. It accounted for 52,394 deaths in the US alone in the year 2012**[2].**

Colorectal diseases can have variable presentations therefore making it difficult to diagnose them on symptomatology alone. Some of the symptoms that are suggestive of lower GI diseases include per rectal bleed, change in bowel habits, chronic diarrhoea and constipation, weight-loss and symptoms of anaemia or nutritional deficiencies.**[3]** A study conducted in 2012 in the U.S. revealed that per rectal bleed had an annual incidence of 20.5 in 100,000 in the general Western population and resulted in 1 to 2% of all hospital emergencies**[4].**

Colonoscopy is considered the investigation of choice for diagnosing lower GI diseases. It is used for screening, diagnostic and therapeutic purposes. Colonoscopy is considered the most accurate test in detecting lower GI pathologies that are suspected on clinical and radiological examinations**[5].**

Different studies have described variable spectrum of lower GI symptoms and pathologies on colonoscopies. In a study conducted in Pakistan, a major indication for colonoscopy was rectal bleeding followed by chronic diarrhoea. Colonoscopy findings in this study were normal in a significant number of patients while inflammatory bowel disease was most common pathological finding in this study**[6].**

Yaqoob et al[7] reported 50% of lower GI endoscopies as normal. Lower GI endoscopy identified a problem that explained the symptoms in only 10%cases. Rectal bleeding was the most reliable symptoms and provided high diagnostic yield (67%) of colonoscopy. A study conducted in Sri Lanka showed that rectal bleed followed by altered bowel habits was associated with appropriate colonoscopy findings of about 70%**[8].** Another study conducted in Karachi showed hemorrhoids to be the most commonly diagnosed pathology followed by ulcers**[9].**

In our study we aimed to look for common indications and GI pathologies observed on colonoscopy at our tertiary care hospital and to assess its diagnostic yield with respect to different clinical indications. Rehman Medical Institute is 600 bedded tertiary care unit with a catchment area extending beyond borders to Afghanistan which allowed us to see variety of patients with different ethnicities.

MATERIALS AND METHODS

This was a cross sectional study was conducted at Rehman Medical Institute over a period of 15 months from

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1st January 2018 to 31st March 2019 and comprised 573 patients. The demographic profile, indication of colonoscopy and referring doctor's specialty was noted. Colonoscopy was performed by an experienced consultant. Patients were given midazolam or rectal lignocaine or both as needed. Pain score was recorded as VRS scale. The subjects had to rate the possible changes in pain by one of five categorical descriptors: "much less pain," "a little less pain," "the same pain," "a little more pain," or "much more pain".[10] Gut preparation, extent of colonoscopy and positive findings were noted. Diagnostic yield of indications was assessed by the percentage of significant lesions picked up on colonoscopy.[11,12] Significant lesions were defined according to EPAGE II as malignant growth, Stenosis, Inflammatory bowel disease and angiectesias[12]**.** Data was entered and analyzed through SPSS-22. Student's T test and Chi Square tests were employed to look for statistical relation wherever indicated. P value ≤ 0.05 was taken significant.

RESULTS

Two hundred and thirty one were (40.3%) male cases and 342(59.7%) female cases. The cecum was achieved in 336 (58.6%) of the patients undergoing colonoscopy. Lignocaine rectal gel and midazolam in combination were the most frequently used sedatives followed in frequency by midazolam alone and rectal gel. General surgery accounted for the most number of referrals followed by gastroenterology (Table 1).

Table1: Demographic information of the patients (n=573)

Variable	**No.**	**%**
Mean age (years)	42.32±17.51	
Gender		
Male	231	40.3
Female	342	59.7
Cecal Intubation		
Yes	336	58.6
No	237	41.4
Gut Preparation		
Good	451	78.0
Poor	122	21.0
Sedation		
Lignocain Rectal Gel	31	5.4
Midazolam	125	21.6
Both	315	55.0
None	102	17.0
Pain Score		
VRS 1	464	81.0
VRS 2	62	11.6
VRS 3	25	4.4
VRS 4	17	3.0
Referring Department		
General Surgery	303	52.9
General Medicine	51	8.9
Gastroenterology	219	38.2

Evaluation of per rectal bleed was the most common indication for performing a colonoscopy, accounting for 284 (49.6%) of all colonoscopies performed followed by altered bowel habits in 125 (21.8) of the cases (Fig. 1). Per rectal bleeding was the most frequent indication for colonoscopy in all age groups, individuals aged 30 to 50 had the greatest frequency of PR bleed 121 (42.6%). Iron deficiency anaemia and abnormal CT findings were more frequent in the age group 50-70 years 16 (47.1%) and 13 (35.1%) respectively.

Of all the colonoscopies performed, 252 (44%) turned out to be normal. One hundred and seventy three (30.2%) revealed lesions that were significant and 148 (25.8%) revealed insignificant lesions. Figure 2 illustrates the pathologies diagnosed on colonoscopy in further detail.

An abnormal growth on colonoscopy was mostly found in individuals aged 51-70 years with a frequency of 18 (37.5%), strictures were greatest in individuals aged 30 to 50 attributing to 5 (62.5%) of all cases. Polyps had the greatest frequency in young adults aged less than 30 years 17 (43.6%). IBD and colitis were more common in participants aged 30-51. Abnormal CT abdomen revealed significant lesions in 62.2% of patients. Chronic diarrhoea had 34.5% and constipation gave 25.7% positive diagnostic yield. 20.9% patients with bleeding per rectum had significant lesions. Altered bowel habits and IDA showed significant lesions only in 17.6% and <10% respectively [P<0.05] (Table 2).

Fig. 1: Indications for colonoscopy

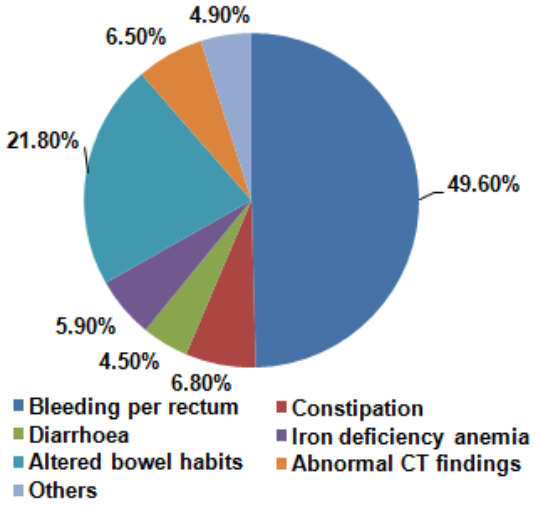

Fig. 2: Pattern of colonoscopic findings

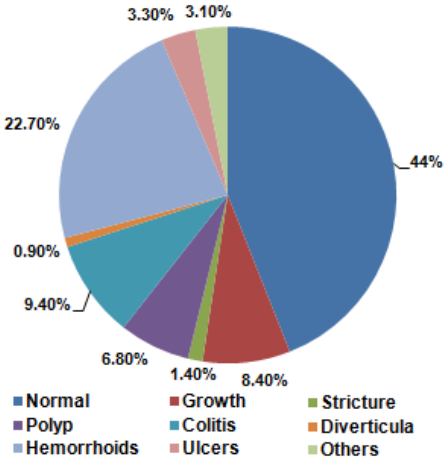

Table 2: Frequency of colonoscopy findings in different indications

Colonoscopy Indications	Colonoscopy findings								
	Normal	**Growth**	**Stricture**	**Polyp**	**Colitis**	**Diverticula**	**Hemorrhoids**	**Ulcers**	**Others**
PR bleed	33.5% (n=95)	5.3% (n=15)	0.4% (n=1)	9.5% (n=27)	9.9% (n=28)	0.7% (n=2)	34.5% (n=98)	4.6% (n=13)	1.8% (n=5)
Constipation	59% (n=23)	2.6% (n=1)	12.8% (n=5)	2.6% (n=1)	2.6% (n=1)	5.1% (n=2)	10.3% (n=4)	2.6% (n=1)	2.6% (n=1)
Diarrhea	61.5% (n=16)	11.5% (n=3)	3.8% (n=1)	-	15.4% (n=4)	-	-	3.8% (n=1)	3.8% (n=1)
IDA	76.5% (n=26)	2.9% (n=1)	-	2.9% (n=1)	2.9% (n=1)	-	8.8% (n=3)	2.9% (n=1)	2.9% (n=1)
abnormal CT	29.7% (n=11)	51.4% (n=19)	2.7% (n=1)	-	5.4% (n=2)	2.7% (n=1)	-	-	8.1% (n=3)
Altered bowel habits	57.6% (n=72)	6.4% (n=8)	-	3.2% (n=4)	10.4% (n=13)	-	19.2% (n=24)	0.8% (n=1)	2.4% (n=3)
Others	32.1% (n=9)	3.6% (n=1)	-	21.4% (n=6)	17.9% (n=5)	-	3.6% (n=1)	7.1% (n=2)	14.3% (n=4)

DISCUSSION

In our study mean age of patients was 42yrs. All guidelines recommend this screening procedure above 50 years, if done under it must have some appropriate indication for it.[9] Our study population was comparatively young as compared to some studies[9,11,13]. On the other hand studies conducted in 2 cities of Pakistan showed results similar to our study[14,15].

In our study females were more; this is concordant with a study conducted by Joukar et al[16] and Alvi[17] while other studies documented more males having lower GI pathologies undergoing colonoscopy[9, 18,19]. Cecal intubation rate was 58.6% in our study. A study from Islamabad described only 42% complete exploration rate[7]. While in other studies it as higher as 80%[15]. The reason for this can be multifactorial like poor gut preparation, excessive bowel looping, participant discomfort and impassable and non-negotiable obstructing lesions or cancers of large bowel[7,20,21].

Rectal bleeding was the most common indication of colonoscopy followed by altered bowel habits, well supported by a study[8].Bleeding per rectum was most common indication for colonoscopy in other studies as well[6,15].

Regarding colonoscopic findings, 44% patients had normal colonoscopy. Studies at different centers of Pakistan described relatively less number of normal colonoscopies 30%[9] and 22%.[15] However two other studies revealed 50% of normal colonoscopies[7,8]. The reason for the difference in diagnostic yield was mainly the appropriateness of indications for which the procedure was being performed.

The most common positive finding in our study was hemorrhoids. This is supported by another study in literature[9,15,16]. Colitis and abnormal growth were the next most common findings. These two were observed commonly in other studies[6,15].

Regarding diagnostic yield, Abnormal abdominal CT scan was the most reliable indication directing towards positive yield of colonoscopy. It is supported by another study by Colvin et al[22] which stated that suspicious CT scan warrants further investigation. Altered bowel habits and IDA showed markedly less number of significant lesions hence contributing to a low diagnostic yield. Only a couple of studies have been done that focused on diagnostic yield of different indications. In one study, the patients with altered bowel habits had the diagnostic yield of 29%.[7] In another study it was 39.6%.[8] In a large multicenter study, anaemia and altered bowel habits gave a very high yield of colonoscopy[23]. There is a difference in indication of colonoscopy in terms of diagnostic yield even in guidelines published by two societies.[12] Further studies in our setup should be performed to clarify the difference in this regard.

Rectal bleeding was the most common indication for colonoscopy in our study and hemorrhoids were the most common finding that correlated well with the indication. Diagnosis of hemorrhoids could have been done even on sigmoidoscopy.[24] Thus, it is logical to perform relevant procedure according to indication, especially where there is limited manpower and facilities[25]. Only in high risk patients with relevant symptoms, abnormal non-invasive investigations and sigmoidoscopy negative patients should colonoscopy be performed to reach the diagnosis[26]. Our study has a limitation. It is a single hospital based study so we can only give frequency data.

CONCLUSION

The colonoscopy was done for rectal bleed in most cases, followed by altered bowel habits. Most common colonoscopy findings were hemorrhoids followed by colitis and abnormal growth. 44% of colonoscopies were normal and only 30.2% showed significant lesions. Abnormal CT abdomen gave the best positive diagnostic yield for colonoscopy.

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