SAFETY AND EFFECTIVENESS OF LEFT SIDE COLONOSCOPY OR SIGMOIDOSCOPY VERSUS TOTAL COLONOSCOPY IN PATIENTS LESS THAN 45 YEARS OLD AGE PRESENTED WITH THE PERIANAL DISEASE AT KURDISTAN CENTER FOR GASTROENTEROLOGY/ SULAYMANIYAH

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ABSTRACT

Background

Colonoscopy and flexible sigmoidoscopy are recommended tools for diagnosing colorectal diseases, but their relative effectiveness needs to be clarified. Direct comparisons of colonoscopy and sigmoidoscopy in the same population would help inform patients, providers, and policymakers about patients presented with perianal features and colorectal cancer (CRC) screening options.

Objectives

To evaluate the ability of each of these two modalities (colonoscopy and sigmoidoscopy) to reach the diagnosis in patients presenting with features suggestive of perianal disease and to determine factors that predict safely performing left-sided colonoscopy in patients less than forty-five years old given with features suggestive of perianal disease.

Materials and Methods

This prospective cross-sectional study will be conducted between the 1st of January 2021 and the 1st of January 2022 in the department of KCGH (Kurdistan center for gastrointestinal and Hepatology) / Teaching-Hospital, Sulaymaniyah City, Iraq. One thousand patients presented with features (bright red bleeding per-rectum, blood on toilet tissue, pain and itching in anal region, anal soiling) of perianal disease were subjected to sigmoidoscopy and extended to full colonoscopy. The patients are divided into two groups, each group of 500 patients. The first group (basic group) includes patients younger than 45 years and the second group (comparison group) includes patients aged equally and more than 45 years.

Results

The mean age of the primary group is about 33 years. All patients underwent sigmoidoscopy and extended to total colonoscopy with terminal ileal intubation; in the basic group, we have 48 (4.8%) patients with left side polyps (10 large and 38 small polyps) and 16 (1.6%) right side polyps (2 large and 14 small polyps), in this group, we have only 6 (0.6%) patients with left side colonic mass and no cases of right side colonic mass, while in comparison group we have 115 (11.5%) cases with left side colonic polyp (27 large and 88 small polyps) and about 86 (8.6%) cases of right side colonic polyp, regarding detecting mass in this group we have 20 (2.0%) cases of left side colonic mass and 6 (0.6%) cases of right side colonic mass..

Conclusion

Colonoscopy and sigmoidoscopy are important tools for investigating patients presenting with perianal features. While both are sensitive to detecting pathology in the left side of the colon, our study concluded that although colonoscopy is the ideal procedure for detecting lesions in the whole colon (proximal & distal to splenic flexure), limited colonoscopy up to splenic flexure can be safely carried out in patients less than 45 years old presented with perianal diseases.

Keywords: *Perianal disease, Sigmoidoscopy, Colonoscopy.*

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INTRODUCTION

A colonoscopy is an essential diagnostic tool for clarifying many gastrointestinal complaints. It is very sensitive to detecting pathologies that cause bleeding in the lower gastrointestinal tract and can be used for treatment during the examination [1,2].

Both colonoscopy and sigmoidoscopy can detect and remove polyps, potentially preventing malignant transformation and decreasing CRC incidence and mortality. Both can also provide early detection of asymptomatic cancers, further decreasing mortality. Randomized controlled trials have demonstrated reductions in overall CRC incidence and mortality with screening sigmoidoscopy [3-7].

In a population-based screening program, colonoscopy has short-term disadvantages compared to flexible sigmoidoscopy, including higher complication risk, greater need for sedation, a higher level of operator skill, and higher overall cost [8]. Because colonoscopy can examine the entire colon, its effectiveness in reducing mortality is hypothesized to be superior to that of flexible sigmoidoscopy, which only directly examines the distal colon. While randomized trials have shown flexible sigmoidoscopy to be less effective for the reduction of proximal than distal CRC mortality, observational colonoscopy studies also suggest differences in effectiveness by location. Therefore, the comparative effectiveness of colonoscopy and sigmoidoscopy needs clarification [8].

A detailed history of the type of gastrointestinal bleeding can shed light on the probable cause of the pathology, particularly typical outlet bleeding (patients with bright red blood can be seen on toilet paper or in the toilet bowl during or after defecation and without colorectal neoplasia in the family or past medical history and no change in bowel habits) is likely due to benign anal disease or pathology of the distal colon. Whereas flexible sigmoidoscopy potentially identifies all lesions up to the splenic flexure and possibly everything necessary in patients with outlet bleeding who do not meet other indications for colonoscopy [9].

MATERIALS AND METHODS

It is a prospective cross-sectional study performed in the Gastroenterology and Hepatology Teaching Hospital, Sulaimaniyah, Iraq. Ethical consent, both verbally and with the written paper, was obtained before the study's beginning. A total of 1000 patients participated, five hundred were aged less than 45 (First group: basic group), and the other 500 hundred were equal to or above 45 years (second group: comparison group). The study was done from Jan 2021 to Jan 2022. Participants who attended or were referred to KCGH with rectal bleeding and perianal features underwent colonoscopies. All patients have been prescribed a detailed oral informed consent, and a written consent signature is obtained, containing full details of the procedure with risks and benefits.

Demographics and detailed clinical and procedural data are provided to the patient, including the indications for colonoscopy, the duration of the procedure, therapeutic interventions that may have been performed, and the complications of the colonoscopy. Olympus-Optera CF-170 AL and Olympus-Exera CF-160 AL were used for colonoscopy. Patients were observed after colonoscopy and safely discharged home after proper assessment and evaluation. All patients had undergone total colonoscopy with ileal intubation and were admitted to the study to see whether they had significant endoscopic findings proximal to splenic flexture that forced us to do complete colonoscopy according to age.

Inclusion criteria

All patients presented or referred to KCGH with features suggestive of perianal disease except those with exclusion criteria.

Exclusion criteria: All patients aged less than 12 years, Pregnancy, known chronic liver disease, chronic kidney disease, previously diagnosed cases of inflammatory bowel disease, and congestive heart failure.

Statistical analysis:

All statistical computation is enhanced using the statistical method (SPSS 24). The data were coded, tabulated, and presented in a descriptive form. The statistical procedure that was applied to determine the results of the present study included the following:

Descriptive statistical data analysis: Categorical data will be expressed as (Frequency, Percentage, Mean, and standard deviation). Inferential data analysis: Chi-square will be used to determine any significant difference between the two groups. ($P< 0.05$) was regarded as significant.

RESULTS

All patients presented or referred to KCGH with features of the perianal disease and had inclusion criteria admitted in the study; this includes one thousand patients subdivided by age (below/ equal or above 45 years) into two groups; in the basic group, we have 48 patients with left side polyps and 16 right side polyps).

In this group, we have only six patients with left-side colonic mass and no cases of right-side colonic mass, while in the comparison group, we have 115 cases with left-side colonic polyp and about 86 cases of the right-side colonic polyp. Regarding detecting mass, we have 20 cases of left-side colonic mass and 6 cases of right-side colonic mass.

Regarding the sex of patients in the basic group, female patients were predominant, and the mean age was about 33 years old. Table (1) shows the Socio-demographic of the basic group, and the majority of the age was between 31 – 40 years old, 38.4% of the total, while 27.2% was between 20 – 30 years old and only 7.8% was less than 20 years old. Moreover, most participants (55.6%) of the respondents were females, only (44.4%) were males, and about 60% of patients lived in Rural.

Table (2) indicates the Presenting symptoms of the patients; most of the presentation was bleeding per rectum, which concludes about 88.8% of the total. Table (3) indicates the diagnostic findings of the complete colonoscopy in the basic group. Approximately half of the patient's colonoscopies revealed normal total colonoscopy, around 18.8% of the participants had an internal pile, and only 0.4% had a pan colonic polyp. Table (4) represents the association between presentation and (age and sex) of the basic group. There was a statistically significant difference (or association) between presentation and age (p-value=0.004), but there was no statistically significant difference (or association) between presentation and sex of the patients (p-value=0.244).

Table (5) represents the association between diagnostic findings and age in the basic group. There is a statistically significant difference (or association) between diagnostic findings and age.

Table (6) represents the association between diagnostic findings and the sex of the patients in the basic group. There is a statistically significant difference (or association) between diagnostic findings and the sex of the patients (P-value = 0.012).

Table (7) represents the association between diagnostic findings and patients' presentations in the basic group. There is no statistically significant difference (or association) between diagnostic findings and patients' presentations (p-value=0.133).

Table (8) represents the association between diagnostic findings till splenic flexure (sigmoidoscopy) and patient presentations in the basic group. As a result, it shows no association between Sigmoidcopy and patients' presentations (P-Value = 0.130).

Table (9) represents the association between positive findings (lesions: Polyps and Mass) on both sides of the colon in both basic and comparison groups; in the basic group (Age less than 45 years), we have 48 (4.8%) patients with left side polyps (10 large and 38 small polyps) and 16 (1.6%) right side polyps (2 large and 14 small polyps), in this group, we have only 6 (0.6%) patients with left side colonic mass and no cases of right side colonic mass, while in the comparison group (Age equal or more than 45 years) we have 115 (11.5%) cases with left side colonic polyp (27 large and 88 small polyps) and about 86 (8.6%) cases of right side colonic polyp, regarding detecting mass we have 20 (2.0%) cases of left side colonic mass and 6 (0.6%) cases of right side colonic mass, and there is a statistically significant association between findings and age of the patient (P-value = 0.000).

Table 1. Shows the Socio-demographic of the basic group.

Variables		Frequency	Percent
Age (Years)	< 20	39	7.8
	20 – 30	136	27.2
	31 – 40	192	38.4
	40 -45	133	26.6
	Mean ±SD	33.38 ~ 33 ± 8.625	
Sex	Female	278	55.6
	Male	222	44.4
Residency	Rural	300	60.0
	Urban	200	40.0
Total		**500**	**100 %**

Table 2. Shows the Presenting symptoms of the patients in the basic group.

Presentation	Frequency	Percent
Bleeding per rectum	444	88.8
Perianal pain	56	11.2
Total	**500**	**100.0**

Table 3. Shows the diagnostic findings of the colonoscopy in the basic group.

Diagnostic findings	Frequency	Percent
Anal fissure	3	0.6
Anorectal stenosis	3	0.6
Hypertrophied anal papilla	18	3.6
Internal pile	94	18.8
Left side colitis	34	6.8
Left side colonic mass	6	1.2
Left side colonic polyp	48	9.6
Multiple vascular ectasia	13	2.6
Normal	225	45.0
Pan-colitis	11	2.2
Pan colonic polyp	2	0.4
Rectal ulcer	13	2.6
Right side polyp	16	3.2
Terminal ileal lesions (ulcerations, erosions, nodularity, polyp)	14	2.8
Total	**500**	**100.0**

Table 4. Association between presentations and Demographics in the basic group.

Age (Year)		Presentation			Total
		Bleeding per rectum		Perianal pain	
< 20	Frequency	36		3	**39**
	%	7.2		0.6	**7.8**
20 – 30	Frequency	118		18	**136**
	%	23.6		3.6%	**27.2**
31 – 40	Frequency	173		19	**192**
	%	34.6		3.8	**38.4**
> 40	Frequency	117		16	**133**
	%	23.4		3.2	**26.6**
Total	Frequency	444		56	**500**
	%	88.8		6.0	**100.0**
Significant Test		Chi-square Test	23.984	P-Value	**0.004**
Sex		Presentation			**Total**
Female	Frequency	242		22	**278**
	%	48.4		4.4	**55.6**
Male	Frequency	202		8	**222**
	%	40.4		1.6	**44.4**
Total	Frequency	444		30	**500**
	%	88.8		6.0	**100.0**
Significant Test		**Chi-square Test**	**4.167**	**P-Value**	**0.244**

Table 5. Association between diagnostic findings and age of the basic group during colonoscopy.

Diagnostic findings		Age				Total
		< 20%	20–30%	31–40%	40-45%	
anal fissure	Frequency	0	0	0	3	**3**
	%	0.0	0.0	0.0	0.6	**0.6**
anorectal stenosis	Frequency	0	0	3	0	**3**
	%	0.0	0.0	0.6	0.0	**0.6**
hypertrophied anal papilla	Frequency	0	10	3	5	**18**
	%	0.0	2.0	0.6	1.0	**3.6**
internal pile	Frequency	4	30	41	19	**94**
	%	0.8	6.0	8.2	3.8	**18.8**
left side colitis	Frequency	0	19	10	5	**34**
	%	0.0	3.8	2.0	1.0	**6.8**
left side mass	Frequency	0	0	4	2	**6**
	%	0.0	0.0	0.8	0.4	**1.2**
left side polyp	Frequency	0	15	13	14	**42**
	%	0.0	3.0	2.6	2.8	**8.4**
multiple vascular ectasia	Frequency	0	6	0	7	**13**
	%	0.0	1.2	0.0	1.4	**2.6**
Normal	Frequency	23	50	87	65	**225**
	%	4.6	10.0	17.4	13.0	**45.0**
pan colitis	Frequency	5	1	10	1	**17**
	%	1.0	0.2	2.0	0.2	**3.4**
pan colonic polyp	Frequency	0	0	0	2	**2**
	%	0.0	0.0	0.0	0.4	**0.4**
rectal ulcer	Frequency	4	2	7	0	**13**
	%	0.8	0.4	1.4	0.0	**2.6**
right side polyp	Frequency	0	1	5	10	**16**
	%	0.0	0.2	1.0	2.0	**3.2**
terminal ileal lesions (ulcerations, erosions, nodularity, polyp)	Frequency	3	2	9	0	**14**
	%	0.6	0.4	1.8	0.0	**2.8**
Total	Count	39	136	192	133	**500**
	%	7.8	27.2	38.4	26.6	**100.0**
Significant Test		**Chi-Square Test**		**130.813**	**P-Value**	**0.000**

Table 6. Association between diagnostic findings and sex in the basic group during colonoscopy.

Diagnostic findings		Gender		Total
		Female	Male	
anal fissure	Frequency	3	0	3
	%	0.6	0.0	0.6
anorectal stenosis	Frequency	0	3	3
	%	0.0	0.6	0.6
hypertrophied anal papilla	Frequency	8	10	18
	%	1.6	2.0	3.6
internal pile	Frequency	58	36	94
	%	11.6	7.2	18.8
left side colitis	Frequency	13	21	34
	%	2.6	4.2	6.8
left side mass	Frequency	5	1	6
	%	1.0	0.2	1.2
left side polyp	Frequency	24	18	42
	%	4.8	3.6	8.4
multiple vascular ectasia	Frequency	10	3	13
	%	2.0	0.6	2.6
Normal	Frequency	125	100	225
	%	25.0	20.0	45.0
pan colitis	Frequency	6	11	17
	%	1.2	2.2	3.4
pan colonic polyp	Frequency	0	2	2
	%	0.0	0.4	0.4
rectal ulcer	Frequency	7	6	13
	%	1.4	1.2	2.6
right side polyp	Frequency	13	3	16
	%	2.6	0.6	3.2
terminal ileal lesions (ulcerations, erosions, nodularity, polyp)	Frequency	6	8	14
	%	1.2	1.6	2.8
Total	Frequency	278	222	500
	%	55.6	44.4	100.0
Significant Test	**Chi-Square Test**	**28.484**	**p-value**	**0.012**

Table7. Association between diagnostic findings and patients' presentations in the basic group during colonoscopy.

Diagnostic findings		Presentation		Total
		bleeding per rectum	perianal pain	
left side colonic finding	Frequency	208	21	229
	%	41.6	4.2	45.8
Normal	Frequency	193	32	225
	%	38.6	6.4	45.0
right side colonic and terminal ideal finding	Frequency	43	3	46
	%	8.6	0.6	9.2
Total	Frequency	444	56	500
	%	88.8	11.2	100.0
Significant Test	**Chi-Square Test**	**4.098**	**P-Value**	**0.133**

Table 8. Association between diagnostic findings till splenic flexure (sigmoidoscopy) and patients' presentations in the basic group.

Sigmoidoscopy		Presentation		Total
		bleeding per rectum	perianal pain	
Normal	Frequency	230	35	265
	%	46.0%	7.0%	53.0%
Positive finding	Frequency	214	21	235
	%	42.8%	4.2%	47.0%
Total	Frequency	444	56	500
	%	88.8%	11.2%	100.0%
Significant Test	**Chi-Square Test**	**1.876**	**P-Value**	**0.130**

Table 9. Association between positive findings (lesions: Polyps and Mass) in both sides of the colon in both primary and comparison groups.

Age		Lesion					
		Lt side polyp		Lt side mass	Rt side polyp		Rt side mass
		Medium and Large >1cm	Small <1cm		Medium and Large >1cm	Small <1cm	
Less than 45	Frequency	10	38	6	2	14	0
	%	4.8		0.6	1.6		0.0
More than 45	Count	27	88	20	9	77	6
	%	11.5		2.0	8.6		0.6
total	Frequency	163		26	102		6
	%	16.3		2.6	10.2		0.6
Chi-square test		**347.640**			**P-Value**		**0.0000**

DISCUSSION

This study aims to find the feasibility of performing a left-sided colonoscopy below the splenic flexture in patients younger than 45 with perianal disease. This approach may be reasonable in this area but not in other areas with a higher incidence of CRC, especially in the western world, and also maybe not be reasonable in the future because of the rising incidence of CRC because of the changes in the lifestyles & westernization of our diet. It is important to mention the new trend of early-onset CRC, but fortunately, most of this occurs on the left side. The rationale of our approach is to conserve resources and time and the burden on colonoscopy services is already scarce in our area.

Most participants of our study were males (55.6%), which is different from the Surveillance, Epidemiology, and End Results (SEER) registry study in which females have a higher percentage of right-sided colon lesions than males [(10)].

Regarding the association in our study between positive findings (lesions: Polyps and Mass) in both sides of the colon in both basic and comparison groups revealed that in the basic group (Age less than 45 years), we have 48 (4.6%) patients with left side polyps (10 large and 38 small polyps) and 16 (1.6%) right side polyps (2 large and 14 small polyps). However, in the comparison group (Age equal to or more than 45 years), we have 115 (11.5%) cases of left-side colonic polyps (27 large and 88 small polyps) and about 86 (8.6%) cases of right-side colonic polyp. It is almost comparable with the Italian SCORE trial in which distal adenomas were detected in 10.8%. The yield of proximal adenomas among those without distal cancer who underwent colonoscopy was 15.5% [(11)] .

Regarding mass detection in the basic group, we have only 6 (0.6%) patients with left-side colonic mass and no cases of right-side colonic mass, while in the comparison group, we have 20 (2.0%) cases of left-side colonic mass and 6 (0.6%) cases of right-side colonic mass and it slightly lower than colorectal cancer detection in the SCORE trial which was 5.4% [(13)].

Results of previous case-control studies suggested that flexible sigmoidoscopy could reduce distal colon cancer incidence and mortality by around 70%; our result is comparable with a study done by Wendy S. Atkin et al.; which showed that flexible sigmoidoscopy is a safe and practical test and, when offered only once to people between ages 55 and 64 years, confers substantial and long-lasting protection from colorectal cancer [12-14] .While colonoscopy has become the most common CRC screening test in the US, there is documented demonstration in the UK Flexible Sigmoidoscopy Trial that sigmoidoscopy decreases distal CRC incidence and mortality and validates the effectiveness of endoscopic CRC screening [15] .

The Socio-demographic of patients in our study showed that the age was between 31 – 40 years old, which was 38.4% of the total, while 27.2% were between 20 – 30 years old, and only 7.8% were less than 20 years old. Moreover, most participants studies (55.6%) of the respondents were males, and only (44.4%) were females and which is comparable with the study done in Iran by Ali Asgari et al. in their study which received A total of 402 patients (183 females and 219 males) and a mean aged 43.6 year [16].

Regarding DRE and the presenting symptom of the patients, our study showed that the majority of the DRE was normal, which concludes 63% of the total, while the most common finding in DRE is an anal fissure which concluded about 13%, and the most common diagnostic result by endoscope in the basic group was internal hemorrhoid which concludes about 18.8%, and it is much lower in comparison with the results done by Nikpour S. et al [16].

The diagnostic findings and age in the basic group showed that the association between diagnostic results and age was statistically significant. We aim to clarify at which age we can safely perform distal endoscopy without fear of missing important proximal pathology. It is going with the UK study done by Steve Halligan at el [17].

The splenic flexture (sigmoidoscopy) and patient presentations in our basic group study showed an association between Sigmoid copy and patients' presentations. It concluded that about half of the patients, and it is comparable with the study done by William Hamilton et al., in their research they found that patients presented with bright bleeding per rectum without IDA or palpable mass or significant finding during sigmoidoscopy decreased risk of missing significant proximal pathology of less than 1% [17].

Our study's limitation is that it was achieved only in one city and may not represent the whole picture. Hence, we advise doing a more extensive study on the subject, including data collection from the whole country and more chronologic follow-up of the patients to clarify when (at which age and which complaint) and how to refer the patient and change from sigmoidoscopy to total colonoscopy.

In conclusion, colonoscopy and sigmoidoscopy are essential for investigating patients presenting with perianal features. While both are sensitive to detecting pathology in the left side of the colon, our study concluded that we could safely (effectively) do sigmoidoscopy for patients who presented with features of perianal diseases and aged below 45 years old. However, colonoscopy better detects lesions beyond the splenic flexture (right side of the colon).

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