DOI: https://doi.org/10.53350/pjmhs2216188

ORIGINAL ARTICLE

Advances in Colonoscopy for Colorectal Cancer Screening: A Comparison between Chromocolonoscopy Vs White Light Colonoscopy

ZAEEM SIBTAIN[1], SALMAN TAJ UPPAL[2], MUHAMMAD AFFAN QAISER[3], MUHAMMAD KAMRAN YOUSAF[4], SYED HAMMAD WAJID TALHA SHAH[5], NAZISH BUTT[6]

[1]*Senior Registrar Gastroenterology, Ittefaq Hospital trust Lahore*
[2]*HOD Gastroenterology, Ittefaq hospital trust Lahore*
[3]*Assistant Professor, Gastroenterologist/Transplant Hepatologist, Pir Abdul Qadir Shah Jeelani Institute of Medical Sciences, Gambat, Khairpur Mirs*
[4]*Assistant professor of medicine, King Edward medical University /mayo hospital, Lahore*
[5]*Assistant Consultant Department of Gastroenterology, Hepatology and Liver Transplantation, Quaid e Azam international Hospital, Islamabad*
[6]*Post graduate trainee, Holy Family Hospital, Rawalpindi*
Correspondence to: Dr. Zaeem Sibtain, Senior Registrar (Gastroenterology), Ittefaq Hospital trust Lahore

ABSTRACT

Aim: A comparison between chromocolonoscopy versus white light colonoscopy in screening colorectal cancer
Methods: Patients were randomly assigned to high-definition white light colonoscopy (HDWLC) and high-definition chromocolonoscopy (HDCH). The patients were divided into two groups, each had 110 individuals
Results: An adenoma affected 1.2 to 2.1 patients on average, while polyps affected 1.4 to 1.9 patients on average, with an adenoma affecting 0.5 to 1.0 patient on average. Both the number of patients with at least one adenoma (54.5% vs. 47.2%, absolute difference 7.3%, 95% confidence interval (p value <0.01) and the number of adenomas per patient (1.2 versus 1.0, P <0.01) were slightly higher in the chromocolonoscopy group. Adenomas that had progressed by 10 mm or more differed from those that had progressed by <10 mm (0.16 versus 0.14, P = 0.4), although the differences were not statistically significant. In each group, one invasive malignancy was discovered, and it wasn't a benign tumor or neoplasm. By chromocolonoscopy, non-neoplastic lesions (1.9 per patient versus 1.1 per patient, P = 0.01) were detected significantly more frequently than adenomas larger than 5 mm in diameter (0.9 per patient versus 0.8 per patient, P < 0.01)
Conclusion: When compared to high-definition white light colonoscopy, high-definition chromocolonoscopy had a marginally greater rate of adenoma diagnosis and a moderate increase in flat adenomas and small lesions but not in large lesions. When it came to more advanced malignancies, both techniques produced the same results.
Keywords: Colorectal cancer, chromocolonoscopy

INTRODUCTION

CRC is more common in people with ulcerative colitis (UC)[1]. Patients with long-standing UC should have routine surveillance colonoscopies performed every one to five years, depending on their risk profiles[2], in order to discover neoplasia early.

There is a significant prevalence of malignancies arising between scheduled monitoring sessions because neoplasia in UC has proven difficult to detect with routine white light endoscopy (WLE)[3].

The objective of the study was to compare between chromocolonoscopy versus white light colonoscopy in screening colorectal cancer

METHODOLOGY

The study was conducted in Ittefaq Hospital, Lahore. Institutional Review Board approved the study. Duration lasted from March 2018 to October 2020. Patient ineligibility was determined by whether the patient had previously undergone a colonoscopy for any purpose other than average risk screening (such as symptom evaluation, anaemia, occult bleeding, or post-polypectomy monitoring) or whether the patient had an average risk colonoscopy. Patients who had previously had screening flexible sigmoidoscopy were not excluded from the trial unless a polypectomy was performed and a follow-up colonoscopy was not required.

During colonoscopy, a research assistant recorded how long it took to reach the cecum, how long it took to withdraw all of the medication, and how long it took to examine the patient's intestines. The examination time was fixed at 6 minutes for all colonoscopy patients, regardless of group. Every region of the bowel was checked thoroughly as part of the withdrawal process. White light colonoscopy involved using a high-definition colonoscope lighted with white light to examine them. As opposed to using the colonoscope, patients who underwent chromocolonoscopy received an intravenous spray of 0.2% indigocarmine using a reusable spraying catheter.

Received on 11-07-2021
Accepted on 22-12-2021

RESULTS

Table 1

Demographic Characteristics	Chromo-colonoscopy	White Light Colonoscopy
Age	57 ±4.5	59.5 ±4.2
Family H/o CRC	6(5.4%)	9(8.2%)
Family H/o Polyps	11(10%)	12(10.9%)
Smokers	22(20%)	18(16.3%)
Alcoholics	13(5.9%)	6(5.4%)
NSAID History	39(35.4%)	35(31.8%)
Calcium Supplements	21(19.1%)	18(16.3%)
Statins history	36(32.7%)	37(33.6%)

Table 2

Medication (mg)	Chromocolonoscopy	White Light Colonoscopy
Propofol	344.5± 140.2	297.1± 129.7
Midazolam	5.9± 8.6	6.5± 9.5
Meperidine	86.7± 22.5	84.2± 25.8
Fentanyl	106.0± 47.4	104.8± 41.8

Table 3

Prep Quality	Chromocolonoscopy	White Light Colonoscopy
Excellent	15(13.63%)	14(12.72%)
Good	21(19.09%)	20(18.18%)
Fair	74(67.27%)	76(69.09%)

Table 4

Colonoscopic Details	Chromocolonoscopy	White Light Colonoscopy
Insertion Time	3.9± 2.1	4.1± 2.9
Procedure Time	28.5± 8.6	20.8± 9.1
Examination Time	8.2± 1.7	7.9± 1.5
Polyps Removed	8(7.3 %)	6 (6.3 %)

Table 5

Anatomical Characteristics	Chromo-colonoscopy	White Light Colonoscopy	P Value
Rectum	25(22.7%)	17(15.5%)	<0.01
Sigmoid	24(21.8%)	21(19.1%)	
Descending	11(10%)	11(10%)	
Splenic	3(2.7%)	3(2.7%)	
Transverse	13(11.8%)	20(18.2%)	
Hepatic	3(2.7%)	7(6.3%)	
Ascending	20(18.2%)	22(20%)	
Caecum	11(10%)	9(8.1%)	<0.01
Polyp mm	4.0 ± 3.4	4.5 ± 3.8	<0.01
Flat polyp mm	3.2 ± 2.0	3.7 ± 3.2	<0.01

Table 6

Rate of Detection	Chromo-colonoscopy	White Light Colonoscopy	P Value
No. of polyps (per patient)	4.2 ± 4.2	3.1± 2.7	<0.01
One adenoma at least	60 (54.5 %)	52 (47.2 %)	<0.01
No. of adenoma (per patient)	1.2± 2.3	1.0± 1.7	<0.01
No. of advanced adenoma (per patient)	0.05± 0.36	0.03± 0.24	<0.01
No. of advanced adenomas <10mm	0.02± 0.22	0.01± 0.16	<0.52
No. of advanced adenomas >10mm	0.14± 0.3	0.16± 0.3	<0.42
No of flat adenomas	0.5± 1.1	0.39± 1.0	<0.01
No. of adenomas <5mm	0.9± 1.2	0.8± 1.3	<0.01
No. of non-neoplastic lesion	1.9± 2.2	1.1± 1.2	<0.01

DISCUSSION

Results suggest that high-definition colonoscopy yield for adenomas (including FL at adenomas) is affected unevenly by chromoscopy and that it may be advantageous for some endoscopist, but not for others. However, it must be remembered that chromocolonoscopy leads to significantly more small adenomas and non-neoplastic lesions being removed than with white light colonoscopy, as well as the fact that it is more labor-intensive and time-consuming than with white light colonoscopy in terms of detection rates (>30 min total procedure time, compared with 22 min). In both groups, the rates of finding an advanced adenoma were equal (including small polyps with advanced histology). CRC were found in 0.32% of participants who had screening colonoscopy in the VA study by Choi and colleagues[4].

Research has indicated that both older age and male gender are associated with an increased risk of developing colon cancer during routine screening colonoscopies[7].

Kiesslich et al[5] found that chromocolonoscopy was significantly better than white light colonoscopy in detecting polyps. Rutter et al[6] discovered that chromoscopy increased the detection rate for adenomas, as well as for flat and decreased lesions. Most people believe that the only clinically significant difference between two chromocolonoscopies is a 20% difference[5]. A 7.3% absolute difference in the detection rates of adenoma (from 54.5% for chromocolonoscopy to 47.2% for white light colonoscopy) was found, and 110 patients in each group were required to detect this small difference with an 80% power.

CONCLUSION

We conclude that high-definition chromocolonoscopy should not be widely used to screen for CRC in patients with an average risk of the disease. Our results can be compared to prior randomized trials in European countries on chromocolonoscopy.

Conflict of interest: Nil

REFERENCES

1. Colman RJ, Rubin DT. Histological inflammation increases the risk of colorectal neoplasia in ulcerative colitis: A systematic review. Intest Res 2016;14:202–10.
2. Annese V, Daperno M, Rutter MD, et al. European evidence based consensus for endoscopy in inflammatory bowel disease. J Crohns Colitis 2013;7:982–1018.
3. Rutter MD, Saunders BP, Wilkinson KH, et al. Thirty-year analysis of a colonoscopic surveillance program for neoplasia in ulcerative colitis. Gastroenterology 2006;130:1030–8.
4. Choi CH, Rutter MD, Askari A, et al. Forty-year analysis of colonoscopic surveillance program for neoplasia in ulcerative colitis. Am J Gastroenterol 2015;110:1022–34.
5. Kiesslich R, Fritsch J, Holtmann M, et al. Methylene blue-aided chromoendoscopy for the detection of intraepithelial neoplasia. Gastroenterology 2003;124:880–8.
6. Rutter MD, Saunders BP, Schofield G, et al. Pancolonic indigo carmine dye spraying for the detection of dysplasia in ulcerative colitis. Gut 2004; 53:256–60.
7. Magro F, Gionchetti P, Eliakim R, et al. Third european evidence-based consensus on diagnosis and management of ulcerative colitis. J Crohns Colitis 2017;11:649–70.