International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

Clinical Study in Evaluation of Colonoscopy and CECT Abdomen in Diagnosis of Colorectal Pathologies

Dr. Madhusudhan S[1], Dr. Anil Kumar K N[2], Dr. K. Nischal[3]

Abstract: ***Background: Colorectal cancer (CRC) is amajor health issue affecting population worldwide in recent years. Conventional colonoscopy is the gold standard investigation used for screening and diagnosis of CRC but associated with its own disadvantages in the form of pain, discomfort, abdominal distension and rarely perforation. CECT abdomen is a radiological technique to evaluate the colon without morbidities of conventional colonoscopy. Aims and Objectives: To evaluate the sensitivity and specificity of contrast computed tomography in comparison with conventional colonoscopy. Methodology: Study was conducted from January 2019 to December 2019 on 38 patients. This is a prospective double - blind study. Patients underwent conventional colonoscopy followed by CECT abdomen after informed consent. The conventional colonoscopy findings were regarded as gold standard and were compared with contrast computed tomography in relation to location and type of the lesion. Histopathological findings were noted in patients in whom biopsy was performed. Results: Intraluminal findings of both the investigations were comparable except few incomplete evaluations in conventional colonoscopy secondary to obstructive growth or poor patient compliance. CECT had additional advantages like fat stranding and enlarged lymph nodes but with a drawback of no tissue diagnosis. CECT abdomen and conventional colonoscopy was successful in all patients. Sensitivity of the CECT abdomen was 100% with positive predictive value of 100% in comparison to conventional colonoscopy. Specificity could not be assessed as only positive cases on conventional colonoscopy were taken. Conclusion: Accuracy of CECT abdomen is equivalent to conventional colonoscopy and can be used for evaluating as primary tool in assessing colorectal pathologies.***

Keywords: CECT abdomen, conventional colonoscopy, Colorectal, colonoscopy

1. Introduction

Colorectal cancer (CRC) is a major health issue affecting worldwide population in recent years. It is the third most common carcinoma worldwide, with incidence rates varying 10 folds in both sexes. Highest incidence is in Australia and Western Europe and least in Africa and South - Central Asia. Within Asia incidence is high in all developed Asian countries and low in south Asian countries[1].

Screening is an important tool in the early diagnosis and treatment of CRC, but only 44% of the population undergoes regular screening with various reasons for non - compliance like discomfort, bowel preparation and cost as Conventional colonoscopy was the only screening tool available.

Screening for colorectal cancer is widespread and successful, but screening programs across the globe differ in their recommendations[2].

Conventional colonoscopy is the gold standard with high sensitivity and specificity with advantage of biopsy and intervention but associated with risk for perforation and cardiopulmonary events secondary to sedation. Conventional colonoscopy fails to achieve completion in 3 - 23% of patients due to colon tortuosity, stricture, or fecal matter[3]. CECT abdomenis better patient compliant, no risk for perforation, complete evaluation in obstructive lesions and staging is achieved at the same time, but its own disadvantages like no tissue biopsies, low sensitivity for polyp less than 5mm and mucosal lesions, no scope for intervention, exposure to radiation[4, 5].

Pilot studies in various centers are exploring the potential of helical CT and computer - generated volumetric data analysis for detecting polyps and cancer. Evidence shows polyps or adenoma are the critical factor in CRC[5, 6].

To evaluate the sensitivity and specificity of contrast computed tomography in comparison with conventional colonoscopy.

2. Materials and Methods

Source of data:
Study was conducted on 38 patients who underwent conventional colonoscopy at BGS Global Institute of Medical Sciences from January 2019 to December 2019.

Inclusion criteria:
All patients who had colorectal lesions on conventional colonoscopy.

Exclusion criteria:
Patient who had previous colonic surgeries.

Method of collection data
It is a prospective double - blind study.

Patients who had colonic lesions in conventional colonoscopy, underwent CECT abdomen. Findings of both are corroborated. Diagnosis was confirmed by histopathological examination. The finding in the Conventional Colonoscopy is regarded as gold standard.

3. Results

Study was conducted on 38 patients comprised of 21 males and 17 females (mean age 56 +/ - 12 years). Table 1 shows age distribution and table 2 shows gender distribution.

Age in years	No. of patients	Percentage
30 – 40	6	15.8
41 – 50	9	23.7
51 – 60	11	28.9
61 – 70	10	26.4
>70	2	5.2
Total	38	100.0

Table 1

Gender	No. of patients	Percentage
Male	21	55.2
Female	17	44.8
Total	38	100.0

Table 2

Conventional colonoscopy diagnosis	Gender		Total
	Male	Female	
Suspicious for CA ascending colon	2 (9.5%)	1 (5.9%)	3 (7.9%)
Suspicious for CA transverse colon	3 (14.3%)	2 (11.8%)	5 (13.2%)
Suspicious for CA descending colon	2 (9.5%)	3 (17.6%)	5 (13.2%)
Suspicious for CA sigmoid colon	1 (4.8%)	2 (11.8%)	3 (7.9%)
Suspicious for CA rectum	13 (61.9%)	8 (47%)	21 (55.2%)
Familial adenomatous polyposis	0 (0%)	1 (5.9%)	1 (2.6%)
Total	21 (100%)	17	38 (100%)

Table 3

CECT abdomen diagnosis	Gender		Total
	Male	Female	
Suspicious for CA ascending colon	2 (9.5%)	1 (5.9%)	3 (7.9%)
Suspicious for CA transverse colon	3 (14.3%)	2 (11.8%)	5 (13.2%)
Suspicious for CA descending colon	2 (9.5%)	3 (17.6%)	5 (13.2%)
Suspicious for CA sigmoid colon	1 (4.8%)	2 (11.8%)	3 (7.9%)
Suspicious for CA rectum	13 (61.9%)	8 (47%)	21 (55.2%)
Familial adenomatous polyposis	0 (0%)	1 (5.9%)	1 (2.6%)
Total	21 (100%)	17	38 (100%)

Table 4

Additional findings on CECT abdomen	Number of cases
Fat stranding (Perirectal, Pericolonic, Mesenteric)	25
Lymph nodes (Perirectal, Mesenteric, Pericolonic, Illac)	21
Ascites	3
Pneumo - peritoneum	1
None	3

4. Discussion

The prerequisite for early detection to reduce mortality is cancer detection at an earlier stage with screening in comparison with no screening. Early detection cannot reduce cancer incidence but can aid in proper workup and management[2].

There are evidence to prove regular screening markedly reduce the mortality from colorectal malignancy, but there still debate about the optimal screening tool. Fecal occult blood testing is positive in 30 – 40% of cases. Sigmoidoscopy can be false negative in 10% of the cases. Conventional colonoscopy fails to reveal entire colon in 10 – 15% of cases, misses 10% of the carcinoma in the area viewed and can result in perforation in 1 in 500 – 1000 cases.

Since 1994 CECT abdomen has emerged as a promising tool in evaluation of large intestine. The standard principle is thin section, helical CT of the air distended, prepared colon with interpretation of data based on both axial two - dimensional images of the colonic mucosa and computer generated three dimensional reconstructed images.

In our study finding were similar in all the 38 patients with both CECT and conventional colonoscopy. Conventional colonoscopy was not able to evaluate the entire colon in 13 of the cases due to obstructive lesions or uncooperative patients. CECT gave additional information about fat stranding, lymph node status which could not be evaluated in conventional colonoscopy[7].

In one of the studies CECT had sensitivity of 86%. In another study CECT had sensitivity and specificity of 91% and 99.2% respectively.

In our study sensitivity was 100%.

Rectum was the most common site in our study which accounted for 55% of the cases (n = 21).

CECT is relatively simple and is less invasive than conventional colonoscopy. Bowel preparation is required in both, but CECT takes less time than conventional colonoscopy[8].

One of the concerns in relation to CECT is the radiation dose.15 patients were scanned in supine position with radiation dose of 8 mSv and 19 were scanned in supine and prone position with dose of 18 mSv, which is well below the dosage limit.

5. Conclusion

CECT abdomen is as sensitive as conventional colonoscopy in colonic lesion assessment. In addition, CECT abdomen has advantages like better compliance, better acceptability, and fewer complications with ability to depict lesion and its relation to surrounding structures and to evaluate extra colonic structures like peritoneum, lymph nodes and liver.

Main disadvantages being that there is no histological diagnosis. Hence, we advocate Colonoscopy and CECT abdomen as a better tool in diagnosis of colorectal pathologies.

References

[1] Peter B Cotton, Valerie L Durkalski, Benoit C Pineau, Yuko Y Palesch, Patrick D Mauldin, Brenda Hoffman et al. Computed Tomographic Colonography (Virtual Colonoscopy): A Multicenter Comparison with Standard Colonoscopy for Detection of Colorectal Neoplasia. JAMA.2004; 291: 1713 - 1719.
[2] Lise M. Helsingen, M. D., and Mette Kalager, M. D., Ph. D. Colorectal cancer screening - Approach, Evidence, and future directions. NEJM Evid 2022; 1 (1) 10.1056/EVIDra2100035.
[3] Neri E, Giusti P, Battolla L et al. colorectal cancer: role of CT colonography in preoperative evaluation after incomplete colonoscopy. Radiology 2002; 223: 615 - 619.
[4] Gatto N M, Frucht H, Sundararajan V, Jacobson J S, Grann V R, Neugut A I. Risk of perforation after colonscopy and sigmoidoscopy: a population based study, J Natl Cancer Inst 2003; 95: 230 – 236.
[5] Sosna J, Morrin M M, Kruskal J B, Lavin P T, Rosen M P, Raptopoulos V. CT colonography of colorectal poylps: a meta - analysis. AJR 2003; 181: 1593 - 8.
[6] Osama A, Solieman H H, Zaytoun H A. role of Ct virtual colonoscopy versus conventional colonoscopy in the evaluation of colonic polyps. The Egyptian Journal of Radiology and Nuclear Medicine (2013) 44, 425 - 432.
[7] Dachman A H, Yoshida H. virtual colonoscopy: past, present and future. RadiolClin N Am 41 (2003) 377 – 393.
[8] Rosman A S, Korsten M A. meta - analysis comparing CT colonography, air contrast barium enema and colonoscopy. Am J Med 2007; 120: 203 – 210 e204.

Author Profile

Dr. Madhusudhan S, Post Graduate, M. S. General Surgery, BGSGIMS - First author.

Dr. Anil Kumar KN, Associate Professor in Surgery, BGSGIMS. – Second author

Dr. K. Nischal, Professor of Surgery, BGSGIMS. – Corresponding author