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CT Colonogram as First Line Investigation for Chronic Constipation as a Primary Symptom

Najam Husain[1], Joshua Agilank[2*]

[1]Department of Surgery, Queens Hospital, Burton on Trent, UK

[2]Department of Medicine, Aberdeen Royal Infirmary, Aberdeen, UK

[*]**Corresponding author:** Joshua Agilinko, Department of Surgery, Aberdeen Royal Infirmary, Aberdeen, UK, Tel: 0345 456 6000; E-mail: j.agilinko@nhs.net

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Abstract

Aim: It is a common complaint and challenge for older adults. The aim of this study was to compare and evaluate the feasibility of colonoscopy and CT colonogram in patients with chronic constipation as a primary symptom.

Methods: Data was collected on patients with documented chronic constipation or altered bowel habits. Colonoscopy was carried out by trained endoscopists. Standards employed were based on the British Society of Gastroenterology guidelines for faecal intubation, bowel preparation and level of sedation. Chi square test was carried out for data comparison and P value<0.05 was considered significant.

Results: A total of 102 colonoscopies were performed with 41 performed in males and 61 in females. 67 had a normal colonoscopy result, 21 with diverticulitis, 14 with polyps, 1 with cancer and 1 with colitis. Bowel preparation was adequate in 47 patients, with the rest being satisfactory or poor.

Conclusion: CT colonogram can be first line investigation for patients with chronic constipation. There is a higher failure rate associated with colonoscopy with a failed procedure causing extra stress to the patient.

Keywords: Colonogram; Chronic constipation; Gastroenterology; Sedation

Introduction

Chronic constipation is a polysymptomatic heterogeneous disorder affecting more than a quarter of the Western population [1].

Usually, it is simple to avoid and easy to treat when it occurs with a high proportion of affected people self-treating rather than consulting a healthcare professional.

However, symptoms of constipation may be a sign of a more serious problem requiring medical attention.

A detailed history and physical examination, including a digital rectal examination, are the initial steps in the evaluation of constipation. In keeping with the Rome 3 criteria, a diagnosis may be made on the basis of the presence of two of the following symptoms: less than three bowel movements per week; straining more than 25% of the time; hard stools more than 25% of the time; incomplete evacuation more than 25% of the time.

Evidence suggests that for all ages and sexes presenting with constipation in primary care, the absolute risk of a subsequent diagnosis of colorectal cancer is below 2% [2]. Despite this, there is a growing need of further investigations to rule out malignancy. The role of colonoscopy, colonic transit study, anorectal manometry and CT colonogram has been suggested, and indeed, employed by many surgeons.

We aim to evaluate the diagnostic effectivity of CT colonoogram in patients with a primary symptom. This is based on the quality of bowel preparation in these patients which is in accordance with the British Society of Gastroenterology (BSG) guidelines. It recommends that colonoscopists aspire achieve a 95% or more caecal intubation so that bowel preparation of at least adequate quality can be achieved in 90% of patients.

In our hospital, bowel preparation is as follows: sedation level for age<70:median total dose ≤ 50mg pethidine or ≤ 5 mg midazolam; and sedation level for age ≥ 70: median total dose ≤ 25 mg Pethidine or ≤ 2 mg midazolam and Picolax or Moviprep was used.

Methods

This was a retrospective study conducted at Queens Hospital Burton between January and June 2018. All patients over the age of 18 years were included in this study. Using an online clinical manager database, patient notes and clinic letters, data was collected of patients with documented chronic constipation or altered bowel habits as their main symptom.

Analgesia and sedation were achieved with fentanyl and midazolam. Entonox and pethidine were preferred by some endoscopists.

Picolax was used for bowel preparation with Moviprep been preferred in patients with renal impairment.

Colonoscopy had been carried out by consultant surgeons, consultant gastroenterologists, specialist registrars or specialist endoscopy nurse practitioners.

Data analysis was carried on Microsoft Excel® (Microsoft, Redmond, WA). Chi square test was carried out for data comparison and P value<0.05 was considered as statistically significant.

Results

A total of 102 colonoscopies were performed with 41 performed in males and 61 in females. The age range was 26 to 94 years in which 41 cases were above 70 years having the procedure and 5 of which were above 90 years.

Sedation and analgesia

Most of the patients had the procedure with fentanyl and midazolam with 4 needing Entonox along with the standard concoction (Tables 1 and 2).

Table 1: It indicates the type of sedation and number of patients has been included.

Type of sedation	Number of patients
Fentanyl+Midazolam	88 (including 4 with Entonox)
Fentanyl+Midazolam+Buscopan	4
Fentanyl+Pethidine+Midazolam	1
Pethidine+Midazolam	9

Amount of sedation

Table 2: It indicates the type of sedation with different drug concentrations.

Type of sedation	Number of patients
Fentanyl ≤ 50 micrograms	25
Fentanyl>50 micrograms	67
Midazolam ≤ 3 mg	68
Midazolam>3 mg	29
Pethidine ≤ 50 mg	9
Pethidine>50 mg	1

Diagnosis

Most of our patients (67) had a normal colonoscopy result, 35 patients had a mix of diseases with only one having rectal malignancy (Table 3).

Table 3: It indicates diagnosis of disease using colonoscopy.

Diagnosis	Number of cases
Diverticulosis	21
Colonic polyps	12
Rectal polyps	2
Colitis	1
Rectal malignancy	1

Bowel prep

Picolax was used in 98 patients and the remainder with Moviprep. Good results were obtained in 46% of patients with 24% giving poor results (Table 4).

Table 4: It indicates the results of patients.

Bowel prep	Number of patients
Good	47(46.07)
Satisfactory	31(30.39)

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Poor	24(23.52)

Discussion

We analysed 102 patients with constipation being their primary symptom. Berkowitz et al. [3] in their analysis of the correlation of constipation and colorectal cancer identified one case of malignancy in 79 colonoscopies performed.

Our study is in accordance to theirs and other studies [4,5] as we picked up one cancer in the 102 colonoscopies carried out for constipation. Thus, it is worth mentioning that constipation is a poor predictor of colorectal cancer.

The amounts (dosages) of analgesia and sedation required for colonoscopy was high enough than normal recommended standards.

41 patients above the age of 70 years were subjected to the procedure which eventually required high doses of midazolam and fentanyl. Considering their background co-morbidities, this can become unsafe. For the 5 patients above 90 years, it might not have been the best test suggested to them in the first place. One would argue that their symptoms may have been investigated with a CT colonogram.

The larger requirement of analgesia and sedation in these patients could be due to the longer and more distended colon. With increasing age, there is a higher chance of looping and subsequent lengthening of the colon which makes the procedure more difficult and painful.

As would be accepted, the bowel preparation in such patients would be poor, adding more time to the procedure and constantly irrigating the colon manually. As in our study, in 55 patients, the bowel preparation was not adequate. In the case of the pickup of malignant lesions, this is clearly not ideal if it is missed because of poor colonoscopy views.

Further to this, the colonic polyps pick-up rate was nearly 14% in patients presenting with constipation. This was in accordance with a study by Pepin et al. [6], where 563 sigmoidoscopies and colonoscopies were completed for the evaluation of constipation, and polyps were found in 14.6%.

The Joint Advisory Group on Gastrointestinal Endoscopy, an intercollegiate body responsible for standards, quality and training, has issued guidance on ensuring caecal intubation rates of over 90%. A prospective study of 909 consecutive colonoscopies in Seoul revealed that constipation coupled with poor views on colonoscopy leads to difficult and prolonged caecal intubation times. This subsequently leads to a prolonged insertion time [5].

This was no different in our study, which reported colonoscopy failure rate of 20% in patients with constipation, which is above the recommended guidelines set out by The Joint Advisory Group on Gastrointestinal Endoscopy.

Furthermore, colonoscopy is not without its risks, with serious complications including post-polypectomy bleeding and perforation [7].

The evaluation of constipation as a primary symptom should always start with a good history and examination. In the absence of red flag features of colorectal cancer, a CT colonogram (CTC) is warranted as the initial diagnostic investigation. Many studies have demonstrated a good diagnostic yield of CTC in the setting of colorectal malignancy [8,9].

A meta-analysis reviewing the performance of CTC compared with colonoscopy concluded that in 6393 patients, CTC showed a higher specificity than colonoscopy in the detection of polyps of at least 0.9 mm in size [10].

Conclusion

In patients presenting with chronic constipation, we must first try to categorise them according to the Rome 3 criteria and also bearing in mind the red flag symptoms during our history and examination process. An initial sigmoidoscopy/proctoscopy in clinic may be warranted.

In the absence of red flag features, a CTC is an appropriate investigation to carry out. It has a relatively higher specificity rate in detection of colorectal polyps, requires less analgesia and sedative, and hence confers a lower failure rate when compared with colonoscopy.

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