Should We Do Lower GI Investigations for Melena after a Negative Endoscopy? - Analysis of 192 patients

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ABSTRACT

BACKGROUND: NICE guidelines; Diagnostics Guidance (DG) 2.7 published 26 July 2017 suggests referral to secondary care for suspected cancer with positive Faecal Immunochemical testing (FIT) even when age and symptoms probability is low with Positive Predictive Value (PPV) ranging 0.1% to 3%.

We attempted to do audit, to assess practice, with in and out-patient referrals to Gastroenterology department, referred with complaint of Melena or Rectal bleed towards Lower GI findings, to see if PPV fall within the range outlined by NICE DG 30.

METHODS: Retrospectively analysis of Endoscopy outcomes of patient who underwent Colonoscopy or CT-Colonoscopy from January 2017 to December 2017 at Conquest Hospital. Patients with complaint of melena or rectal bleed, who underwent Endoscopy (OGD), scored less than 8 as per Oakland Criteria were included. Patient scoring 8 or more on Oakland Criteria, with coagulation disorders were excluded. All analysis was done using Excel and JASP.

RESULTS: We categorised the data as group one; moderate to severe **AND** group two; mild severity, and analysed cumulative. Among group one we found, 3 patients with distal bowel cancer (1.56%), 2 with Angiodysplasia (1.04%), 2 with multiple oedematous polyps (1.04%), 1 with pseudo-membranous colitis (0.52%), 1 with distal colitis (0.52%). The group two, included 2 patients with single polyps (1.04%), 3 with milder diverticular disease (1.56%), 2 with haemorrhoids (1.04%), and 2 with Anal fissure (1.04%). Cumulative Upper GI findings in 91/192 (47.33 %), Lower GI findings in 101/192 (52.60 %). Chi Square test 4.88 with $p < 0.02$. Prevalence 13.02%. OR of 1.11, 6.71 **The PPV of 9.375% (higher as outlined by NICE guideline July 2017 for 0.1% to 3%).**

Key Words: *Melena, Gastro-Intestinal (GI), Colonoscopy, CT-Colonography. Positive Predictive Value (PPV), Odds Ratio (OR).*

INTRODUCTION

olonoscopy is commonly done investigations for Lower GI melaena and / or rectal bleed. In clinic setting common causes being caecal abnormalities, and/or angiodysplasia. Usually upper GI bleed is associated with raised urea. However, there are times before this could present in clinic setting, patient may have occult bleed and / or finding of IDA, before raised urea could point towards UGI bleed being the cause, and its exclusion pointing to lower GI pathology. Our aim was in lieu of NICE guidelines to see for lower GI pathology. All patients had undergone the Endoscopy (OGD) at the outset. Then assessment retrospectively to data in our Endoscopy suite for patients who were found to have lower GI pathology and/or dual both upper and lower GI pathology. The need for lower GI investigations remains important towards diagnosing Colonic cancer and/or dysplastic polyps. The aim of this audit was to see the findings of all patients being referred for colonoscopy to our DGH facility with state of art Endoscopy Suite. Then comparing against explicit standard of NICE Guidelines for Diagnostic Guidance DG 30 published 26, July 2017 [1]. Then to assess whether the practice is in line with guidelines outlined by NICE. The most recent work date back to 2012 towards significance of colonoscopy in patients with negative upper GI endoscopy [2] and another audit towards comfort score level towards colonoscopy [3]. We attempted to do a new audit towards colonoscopy at our hospital and analyse outcomes and to gauge with the guidelines by NICE.

METHODS AND MATERIALS

Participants: The study was retrospective looking at data for patients who had been referred from January 2017 to December 2017. This way half study was retrospective prior to the NICE guidelines, and the rest were included post NICE publication. The aim was to eliminate any biases towards patient selection, and practice at our DGH facility prior to and following NICE Guideline Diagnostic Guidance DG 30.

Methodology: 1. Data Entry. 2. Data analysis in Excel and tabulations. 3. Calculations for Statistical Significance by Chi-square test towards p values. 4. Calculations for Positive Predictive value for Statistically Significant result.

Data Collection: Retrospective patients booked for colonoscopy from referrals via the GP services, Ambulatory clinic referrals, Acute Assessment Unit referrals and in-patient referrals from the wards. All patients were selected/ deselected based on inclusion and / or exclusion criteria.

Inclusion Criteria: a. All patients with complaint of melena and/or rectal bleed. b, All patients underwent Endoscopy (OGD.) c. All patients scored less than 8 as per Oakland Criteria. d. Any referrals to Endoscopy Unit from GP, AAU, Ambulatory clinics and Ward.

Exclusion Criteria: a. Any patient scoring 8 or more on Oakland Criteria (severe Gastrointestinal Bleeding). b. Any patient with coagulation disorder.

DATA ANALYSIS

We categorised the data as Moderate to Severe **AND** Mild severity, and

TABLE 1
Endoscopy Procedure data OGD and/or Colonoscopy, CT-Colonoscopy

Total	**192**
Cause found on OGD	**81**
Cause not found on OGD	**111**
Colo results	
Patient needed colo	**111**
Colo's done	**51**
CT abdo pelvis or CT Colon	**16**
Total	**67**
Deceased	**25**
Not investigated	**19**
Cancers found on colo	**2**

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Frequency Tables

TABLE 2A:
Frequency tables for gender

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Female	77	40.104	40.104	40.104
Male	115	59.896	59.896	100.000
Missing	0	0.000		
Total	192	100.000		

TABLE 2B
Frequency tables for cause found with OGD

Cause found with OGD	Frequency	Percent	Valid Percent	Cumulative Percent
No	111	57.813	57.813	57.813
Yes	81	42.188	42.188	100.000
Missing	0	0.000		
Total	192	100.000		

TABLE 3
Frequency tables of outcome.

Frequencies for Colonoscopy report

Colonoscopy report	Frequency	Percent		
Diverticular disease.	15	7.813	7.813	7.813
Oedematous mucosa in the ascending colon with loss of vascular pattern.	1	0.521	0.521	8.333
Tubulovillous adenoma with low grade dysplasia	1	0.521	0.521	8.854
Angiodysplasia	2	1.042	1.042	9.896
Haemorrhoids	5	2.604	2.604	12.500
Inflammatory bowel disease	1	0.521	0.521	13.021
Lymphoma	1	0.521	0.521	13.542
Mild distil colitis	1	0.521	0.521	14.063
Normal	26	13.542	13.542	27.604
Not done	104	54.167	54.167	81.771
Not done - deceased	2	1.042	1.042	82.813
Not done ~ deceased	4	2.083	2.083	84.896
Not done- deceased	10	5.208	5.208	90.104
Not done-deceased	8	4.167	4.167	94.271
Perianal fissure	1	0.521	0.521	94.792
Polyps	6	3.125	3.125	97.917
Pseudomembranous colitis ~ no cancer	1	0.521	0.521	98.438
Rectal cancer	1	0.521	0.521	98.958
Sigmoid cancer	1	0.521	0.521	99.479
Single polyp	1	0.521	0.521	100.000
Missing	0	0.000		
Total	192	100.000		

attempted to analyse cumulative. Among the moderate to severe distil bowel pathology on Colonoscopy and/or CT-Colonography we found, 3 patients with distil bowel cancer(1.56%), 2 with Angiodysplasia (1.04%), 2 with multiple oedematous polyps (1.04%), 1 with pseudo-membranous colitis (0.52%), 1 with mild distil colitis (0.52%), to a total of 10 patients moderate to severe distil bowel findings (5.2%). The mild distil bowel conditions on Colonoscopy and/or CT-Colonography, included 2 patients with single polyps (1.04%), 3 with milder diverticular disease (1.56%), 2 patients with haemorrhoids (1.04%), and 2 patients with Anal fissure (1.04%). Cumulative mild to severe total number of patients in our pool of data was 18 (19.56%). 6 patients (3.125%) had dual both Upper and Lower GI findings, surprisingly among the elderly population. There were 17 patients (8.85%) who died for comorbidities and non-gastrointestinal causes. The other important findings included cause found on OGD 81/192 (42.18%), Colonoscopy done 51/192 (26.56%), CT-Colonoscopy done 16/192 (8.33%), Over all lower GI investigations done 67/192 (34.89%), deceased 25/192 (13.02%), lower GI investigations not done/not needed 19/192 (9.89%), Cancer found on Colonoscopy 2/192 (1.04%). The sample data was analysed with Chi Square test and p was <<<<0.01 suggesting Highly Significance findings. The prevalence was found to be 13.02%. The positive predictive value was then compared to guideline standards outline by NICE, and for our pool of data it suggests PPV of 9.375%, which is higher as outlined by NICE guideline July 2017 for 0.1% to 3%.

Odds Ratio for this audit towards Colonoscopy and/or CT-Colonography is 2.73), with 90% CI being 1.29, 5.91. The 95% CI is 1.11, 6.71. With p values <<< 0.01 and PPV of 9.375% these findings are statistically highly significant. All data analyzed by Excel and JASP.

TABLE 4

Severity of findings and exclusion of lower GI cause.

Total patients in Audit	**192**
DISTAL BOWEL PATHOLOGY:	
Cancer found on colonoscopy	3
Angiodysplasia	2
Multiple Oedematous Polyps	1
Oedematous Mucosa in Ascending Colon	1
Pseudomembranous Colitis	1
Mild Distal Colitis	1
Moderately Severe Diverticular Disease	1
TOTAL A	10
Single Polyp	2
mild diverticular disease	3
Hemorrhoids	2
Fissure per Anus	1
TOTAL B	8
Colonoscopy NOT Required- UGI Cause	157
Colonoscopy NOT Done	113
Colonoscopy NOT Done DECEASED	17
TOTAL Colonoscopy NOT DONE	96

TABLE 5

Overall Colonoscopy procedures and percentages.

Colonoscopy done total	51		
Moderate to severe findings on colonoscopy	10		10/51 = 19.60%
Mild findings on colonoscopy	8		8/51 = 15.686%
Total pt pool - colonoscopy with findings moderate-severe	10/192	5.20%	
Total pt pool - colonoscopy with mild to severe findings	18/ 192	19.56%	

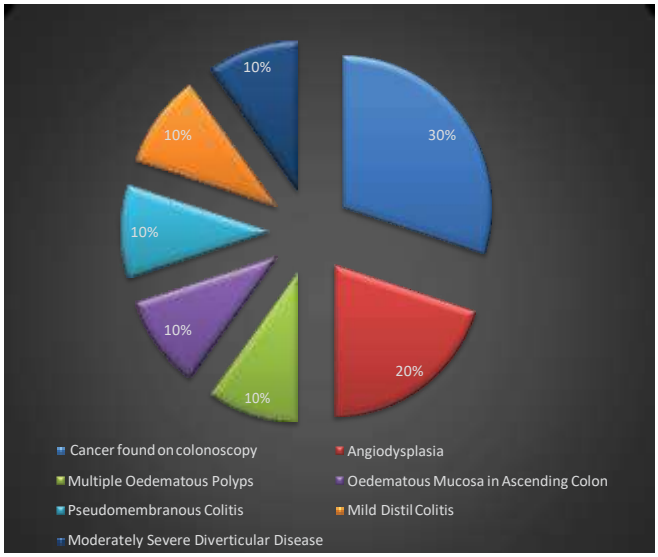


Figure 1: Distal bowel pathology - moderate to high risk severity.

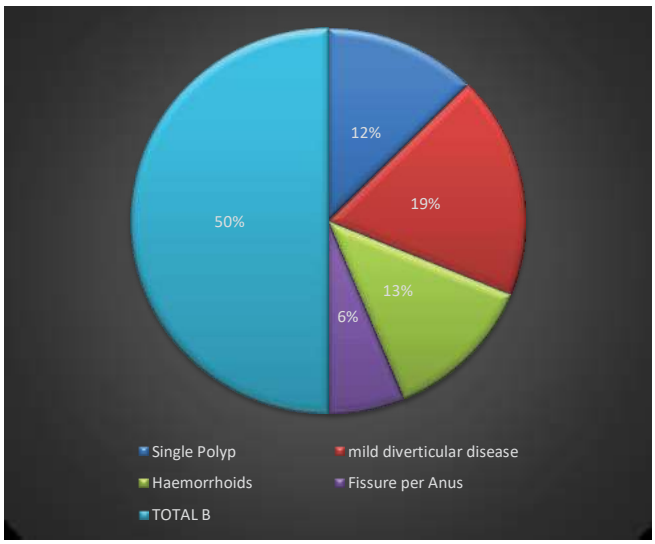


Figure 2: Distal bowel pathology – milder severity.

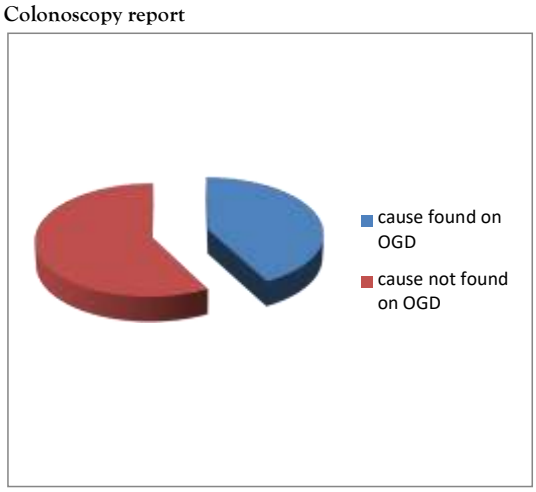


Figure 3: Cause found on OGD versus not found on OGD.

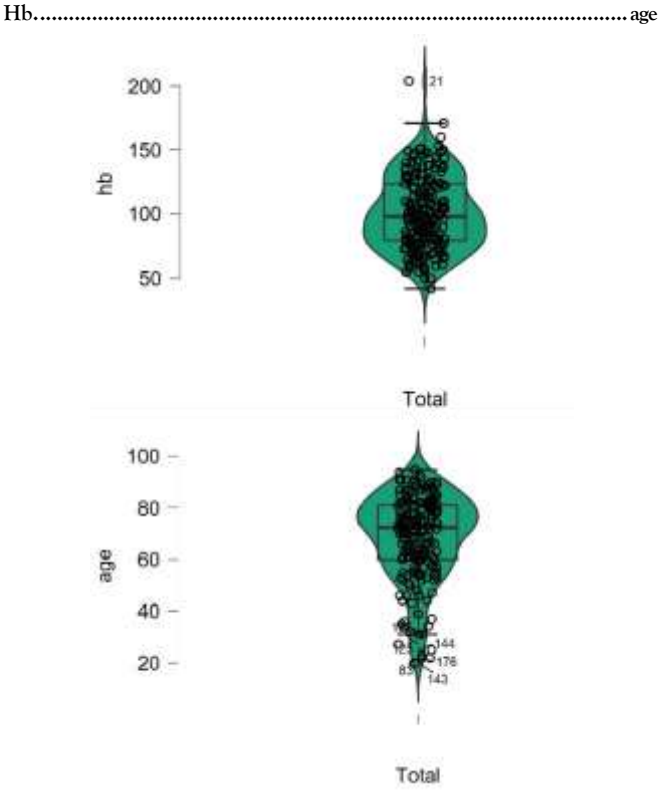


Figure 4: Box plot distribution for Haemoglobin and Age.

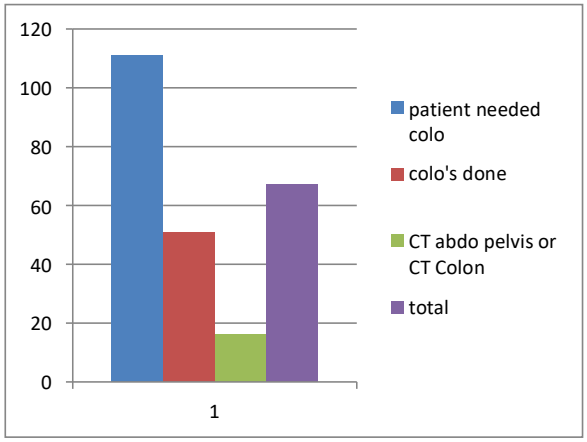


Figure 5: Lower Gastrointestinal Investigations.

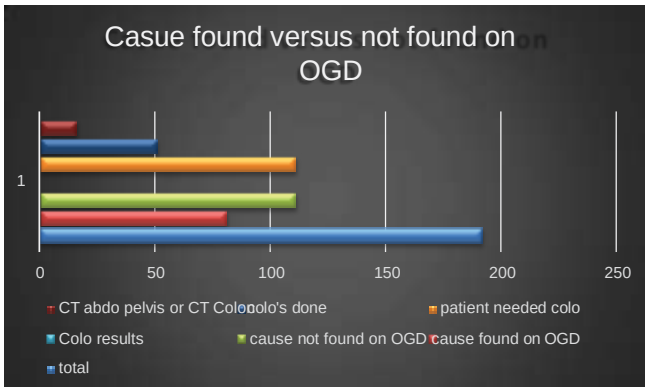


Figure 6: Cause found versus cause not found on OGD.

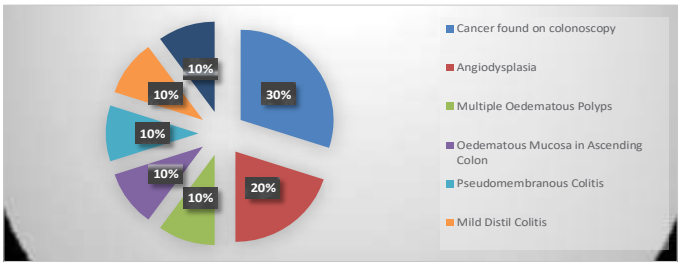


Figure 7: Findings on lower GI investigations.

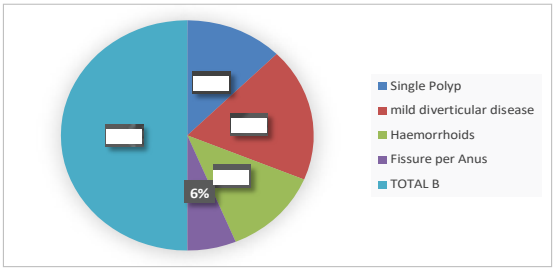


Figure 8: Lower GI pathology- less severe.

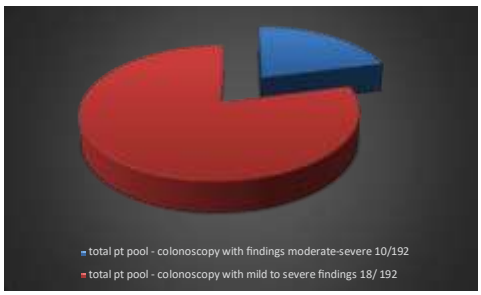


Figure 9: Variation of severity of findings.

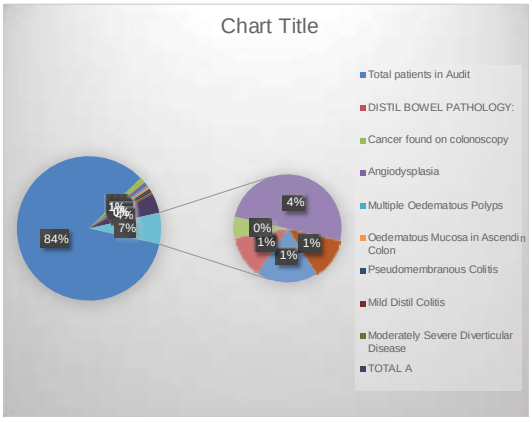


Figure 10: All severity combined.

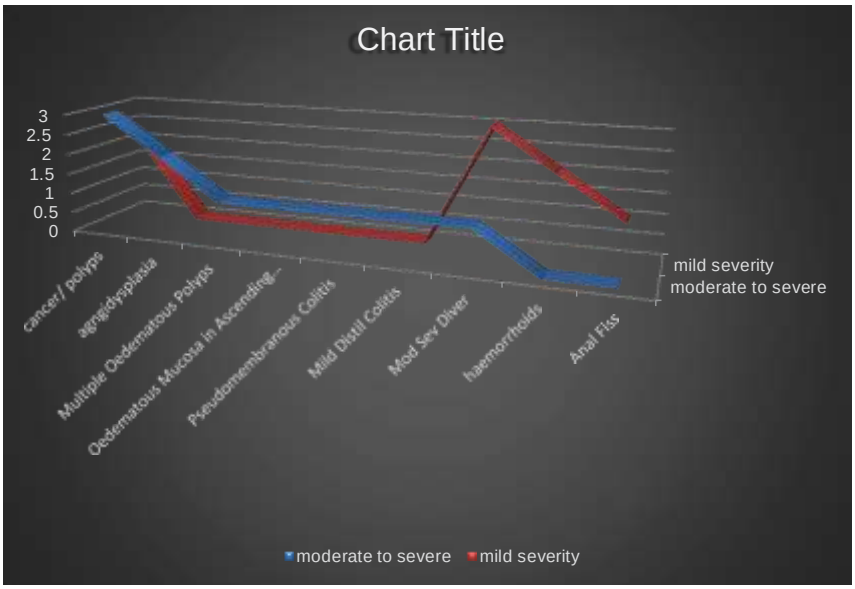
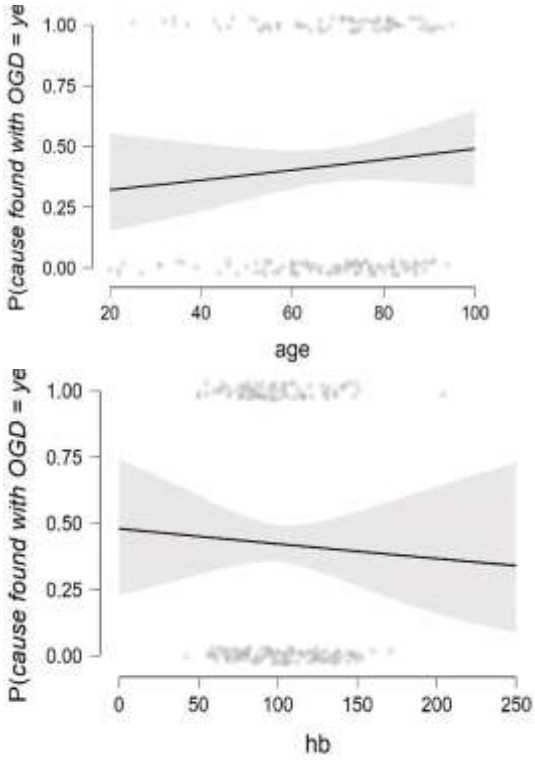


Figure 11: Overlaps between mild severity versus moderate-severe.



Predictor - residuals plots

Age

Haemoglobin

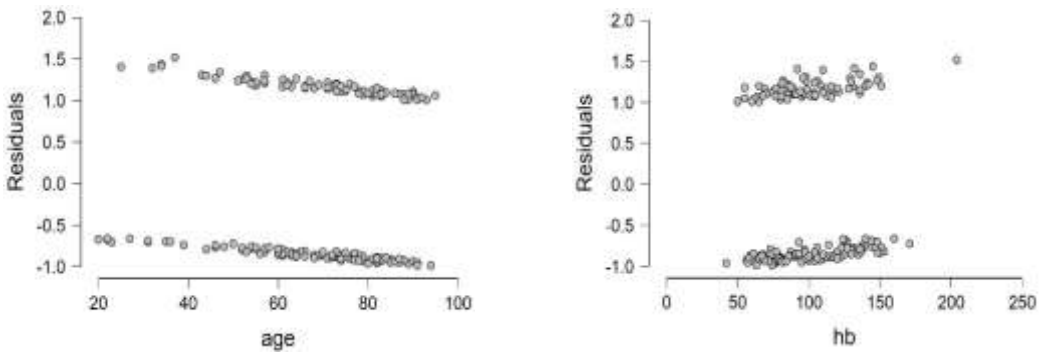


Figure 12: Estimate and Residual plots for Age and Hemoglobin towards Upper Gastroduodenal scope findings.

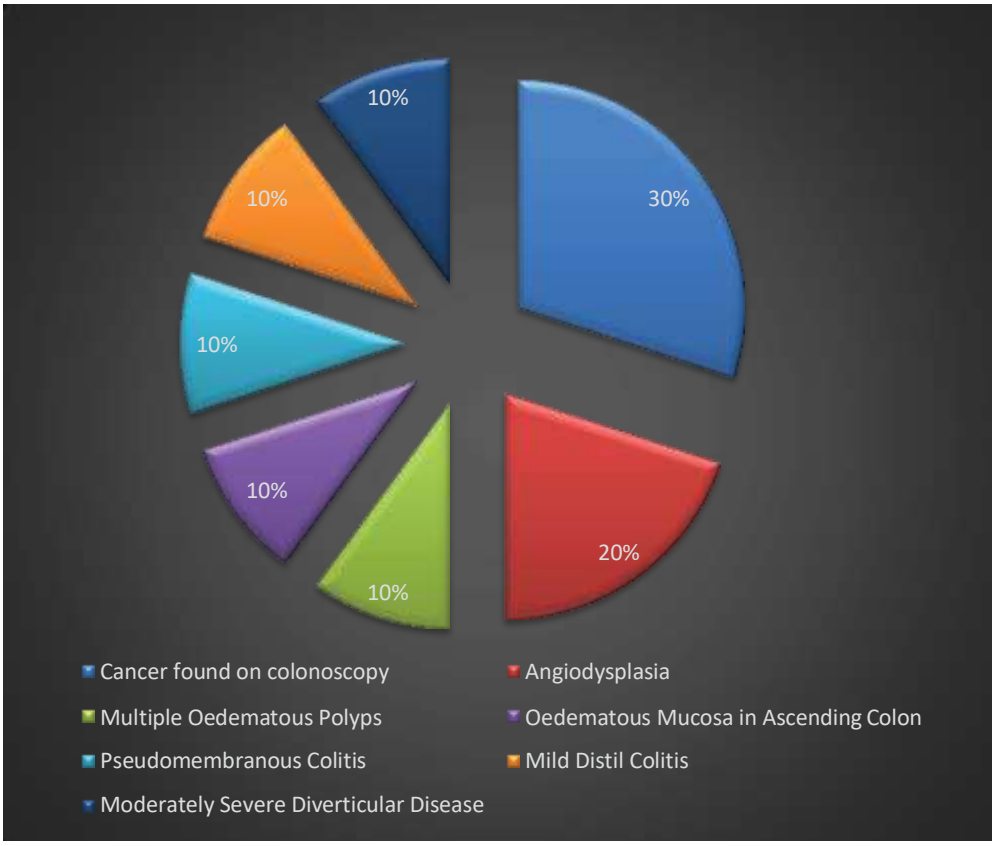


Figure 13: Distal bowel pathology - moderate to high risk severity.

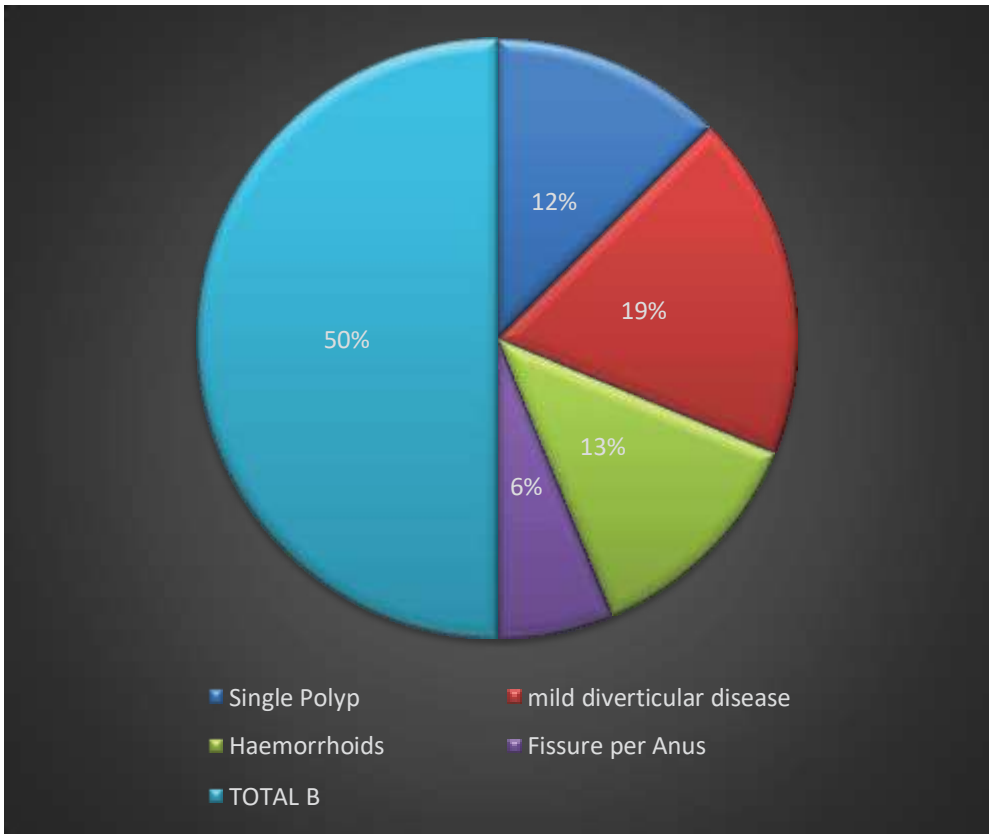


Figure 14: Distal bowel pathology – milder severity.

DISCUSSION

The result of this audit, suggest significant advantage in doing colonoscopy and/or CT-Colonography investigations towards ruling out a lower GI pathology. The PPV of around 9.4% at our center strengthens the implications of NICE Guidelines- Diagnostic Guidance DG 30. It is justified to utilize NHS resources towards finding lower GI pathology as per the General Medical Council Ethical Guidelines towards Good Medical Practice. Multiple risk factors have been reported in the literature towards colonoscopy. These need to be bore in mind. These include; size and location of the polyp [4-6], Cardiovascular disorders, Chronic Kidney Disease [7], age [7-9], the experience of the endoscopist [6] and the prescription of anti-coagulant use [7]. Bleeding [8] and Intensive care admissions [9] are yet other post-procedural adverse outcomes that have been reported. The risks of perforation associated with colonoscopy have been outlined in number of outcomes [10-14]. Never the least the role of retroflexion in rectum, towards finding the pathology has been emphasized in a number of studies and remains corner stone towards ensuring effective colonoscopy procedure [15-18].

CONCLUSION

Retrospective root cause analysis via audit for outcome of Colonoscopy and/ or CT-Colonography has significant advantages in diagnosing lower GI pathology. Confidential access to outcome data provides a basis for targeted educational programs to improve detection of lower GI pathology. It centers from the GP practice in the community, and leading to any referrals made by different in-patient ward setting.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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Mansoor Zafar, MBBS, MRCP, Dr. Tila Muhammad, MBBS, MRCP contributed equally.

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