Colonoscopy at the National Center for Early Detection of Cancer: Evaluating Indications and Diagnostic Yield

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ABSTRACT:

BACKGROUND:

Colonoscopic procedure is an accepted modality for the evaluation of colonic disease and an accurate procedure in the workup and screening of patients with lower gastrointestinal symptoms. The clinical spectrum and diagnostic yield depend upon the indications for the procedure.

OBJECTIVE:

To identify the yield of the major indications for the procedure, and the pattern of colon pathology in study population.

Study design and Setting:

A retrospective study was conducted over a period of ٦ months extending From ١٨th November ٢٠١١ to ١٨th May ٢٠١٢ at the National Center for Early Detection of Cancer by reviewing the records of ٢٢٤ colonoscopy examinations which were done in the center between January ٢٠١٠ and December ٢٠١٢.

RESULTS:

The patients comprised ٦٦ females (٢٩,٤٪) and ١٥٨ males (٧٠,٦%) and their mean ages was (٤٦,٦) years. There were ١١٤ patients (٥٠,٩٪) who were aged less than ٥٠ years. Complete examination to the caecum was possible in ١١٤ cases (٥٠,٩٪).

Pathological findings were identified in ١٢٧patients (٥٦,٧٪). The diagnostic yield of patients referred for lower abdominal pain and alternation in bowel habit was low, of (٢٩,٧٢٪) and (٤٦,٦٦٪), respectively. The yield was high for those with lower gastrointestinal bleeding (٧١,١٥٪), diarrhea (٦١,٩٪), category 'others' (٦٥٪). The diagnostic pattern showed that non-specific colitis and double colonic lesions were identified in (٢٩,١٣٪), and (١٦,٥٣٪) respectively. Colonic cancer was diagnosed in ١٩patients (١٤,٩٦٪), ulcerative colitis in ٩patients (٧,٠٨٪), polyps were detected in١٣patients (١٠,٢٣٪), and internal hemorrhoids in١٧patients (١٣,٣٨٪).

CONCLUSION:

The highest diagnostic yield of colonoscopy procedure was for lower gastrointestinal bleeding and diarrhea and the main pattern of colonic pathology was nonspecific colitis and double colonic lesions.

KEY WORDS: colonoscopy, diagnostic yield.

INTRODUCTION:

Gastrointestinal disorders are extremely common in the general population, [١,٢] which group of patients should be investigated and when? remains controversial. Accurate evaluation of symptoms is important because of the implications for investigation, management and morbidity, although it is often difficult to reach an accurate diagnosis on clinical grounds alone.[٣] The diagnosis of colonic diseases by classical symptoms is often incorrect.[٤] Physical examination and routine hematological and biochemical investigations are also usually point, the clinician needs to decide whether a further investigation is necessary[٥]. The patients' perception of their presenting symptoms also plays a significant role in the management strategy[٦]. Psychosocial factors, including fear of serious disease, may be the important factor for their attendance to a doctor.[٧]

Colonoscopy was introduced in the ١٩٦٠'s and it became a very useful method in the diagnosis and therapy of colonic diseases.[٨,٩]It is the investigation of choice for screening individuals at risk for early cancerous or premalignant

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lesions, thereby helping to minimize the impact of cancer on communities, [١٠]also it is very helpful in investigating gastrointestinal bleeding, unexplained changes in bowel habit or suspicion of colon cancer. A colonoscopy is often used to help in diagnosing inflammatory bowel disease. It is an established procedure in the workup and screening of patients with lower gastrointestinal symptoms. It remains a current practice in many parts of the world to refer such patients for sigmoidoscopic examination and double-contrast barium enema.[٩,١١]

The demand for colonoscopy has been increasing over the years, given the relative safety and the low complication rate associated with the procedure.[٩, ١٠, ١١،١٢]Data has been reported from our part of the world documenting the value of colonoscopy in the diagnosis of colonic disease, [١٣,١٤] however, few studies have analyzed the diagnostic yield of the various indications .[٩]

Colonoscopy has both diagnostic and therapeutic potential. It has been argued that colonoscopy screening is dangerous, expensive, and requires specialized skills. It has, therefore, been suggested that it should only be undertaken in those patients who will derive the most benefit, and that stricter selection criteria should be used to optimize a colonoscopy service. Despite these observations, colonoscopy remains an accurate, reliable, and safe procedure to investigate patients with colonic disease. Some form of patient selection based on the indications is advisable, since the available resources are always limited. [١٥]

AIM OF THE STUDY:

To identify the yield of the major indications for the procedure, and the pattern of colon pathology in study population.

PATIENTS AND METHODS:

A cross-section retrospective study was conducted at the National Center for Early Detection of Cancer, unit of gastroenterology**,** at the Medical city in Baghdad, over a period of ٦ months extending from ١٨th November ٢٠١١ to ١٨th May ٢٠١٢. Evaluation of the lower endoscopy service was achieved by reviewing the records of ٢٢٤ colonoscopy examinations which were done between January ٢٠١٠ and December ٢٠١٢ in the center and included all patients aged ١٨ years or more who underwent colonoscopy successfully and had complete data regarding the name of the patients, age, gender, indication of colonoscopy examinations, endoscopic findings, biopsy results that were taken for pathological evaluation for a final diagnosis , the patients underwent repeated colonoscopies were excluded. Both inpatients and outpatients underwent colonoscopy after bowel preparation with colo-clean (polyethylene glycol) and enema or castor oil and normal saline.

The endoscopy room set up, the instruments, and the numbers of nursing staff were the same for all the patients, the procedures were performed by experienced colonoscopists, Uni-stiffness endoscopes were used (Olympus Optical, Tokyo, Japan).

The examination was considered complete when the caecum was reached. Both sigmoidoscopy and colonoscopy were included in the study and the recorded findings were analyzed. When an abnormality was detected, biopsies were taken for pathological evaluation for a final diagnosis. Biopsies were generally not performed where the findings were macroscopically normal, except in cases of inflammatory bowel disease surveillance. The diagnosis of carcinoma was made by biopsy or polypectomy.

The diagnostic yield of an endoscopic procedure is defined as its capacity for identifying a lesion that is potentially important to patient care ' [١٦] diagnostic yield' was regarded as positive for each of the indications, if the lesion found could account for the symptoms and signs of the patient, and if abnormality reported in the colonoscopy examinations, data analysis also took into account those cases where the procedure was incomplete, i.e. the caecum was not visualized but a diagnosis was established none the less. The data collected was stored in a personal computer and analyzed by using descriptive statistics including frequencies, percentages, means and figures. Chi-square test was used for the significancy of association between different variables, p value of less than ٠.٠٥ was considered as statistically significant.[١٧]

RESULTS:

The total number of colonoscopies with complete data included in the study was ٢٢٤, distributed as ١٥٨ males (٧٠,٦٪) and ٦٦ (٢٩,٤٪) females.

The mean age of patients was ٤٦,٦ years (range ١٨-٩٧) years, the largest percentage ٢٥٪ of patients were in the age group (٥٠-٥٩) years, as shown in figure ١.

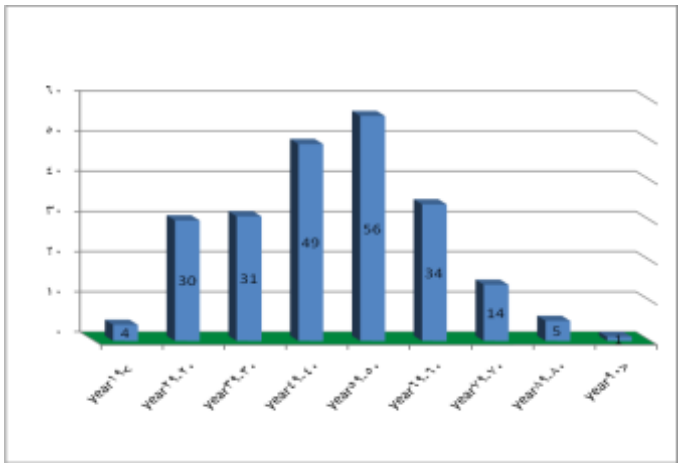

Figure ١: Age distribution of the patients in study population.

Complete examination to the caecum or the terminal ileum was possible in ١١٤cases (٥٠,٩٪). The level of the colon reached by colonoscopy in all patients is shown in table ١.

Table ١: Extent of examination by colonoscopy in studied cases.

Extent of examination	Number of patients	Percentage (%)
Full colonoscopy	١١٤	٥٠,٩
Hepatic flexure	٢٧	١٢
Transverse colon	٧	٣,١٢
Splenic flexure	٤٣	١٩,٢
Sigmoid colon	٣٣	١٤,٧
Total	٢٢٤	١٠٠

Out of total ٢٢٤cases of performed colonoscopy, pathological findings were seen in ١٢٧ patients (٥٦,٧٪), lower gastrointestinal bleeding (٢٣,٢٪), was the highest significant (p value ٠,٠٠٠٥٧٧) indication for colonoscopy procedure, followed by diarrhea (١٨,٧٥٪) although is not statistically significant (p value ٠,٠٥٤٣٦). The diagnostic yields of lower abdominal pain and alternation in bowel habits and weight loss colonoscopy were low, at (٢٩,٧٢٪) and (٤٦,٦٦٪), respectively. This is in contrast to lower gastrointestinal bleeding, diarrhea and the category 'others', which produced a yield of(٧١,١٥٪, ٦١,٩٪ and ٦٥٪), respectively.
Patients with lower abdominal pain showed [١١] positive findings of non-specific colitis ,polyps , diverticular disease and double colonic lesions. Those with constipation showed [١٨] positive findings of(double colonic lesions, internal hemorrhoids,diverticular disease ,polyps and cancer). In case of diarrhea, [٢٦] positive findings of (non-specific colitis, double colonic lesions, polyps of various types, ulcerative colitis, internal hemorrhoids).
The most common positive findings for surveillance were [١٥] and included (ulcerative colitis, double colonic lesions,cancer ,polyps) while alternation in bowel habits and weight loss presented with positive findings in ٧ cases (cancer, non-specific colitis) as shown in table ٢.

Table ٢: Distribution of the studied cases regarding the main indications, percentages and the number of positive and negative findings for each indication.

Indication	Positive findings	Negative findings	Total		p-value
Lower abdominal pain	١١(٢٩,٧٣%)	٢٦(٧٠,٢٧%)	٣٧	(١٦,٥%)	٠,٠٠٥١٦٧
Lower GI bleeding	٣٧(٧١,١٥%)	١٥(٢٨,٨٥%)	٥٢	(٢٣,٢%)	٠,٠٠٠٥٧٧
Diarrhea	٢٦(٦١,٩%)	١٦(٣٨,١%)	٤٢	(١٨,٧٥%)	٠,٠٥٤٣٦
Constipation	١٨(٥٦,٢٥%)	١٤(٤٣,٧٥%)	٣٢	(١٤,٣%)	٠,٢٣٥٥
Surveillance	١٥(٥٧,٦٩%)	١١(٤٢,٣١%)	٢٦	(١١,٦ %)	٠,٢١٤٤
Alternation in bowel habit and weight loss	٧(٤٦,٦٦%)	٨(٥٣,٣٤%)	١٥	(٦,٧٪)	٠,٤٠٠٢
Others	١٣(٦٥%)	٧(٣٥%)	٢٥	(٨,٩%)	٠,٠٨٩٨٦

The highest diagnostic pattern according to histopathological examination in study population was ٣٧cases (٢٩,١٣٪) of non-specific coliti s, double colonic lesions were found in ٢١cases (١٦,٥٣٪), as shown in figure ٣.

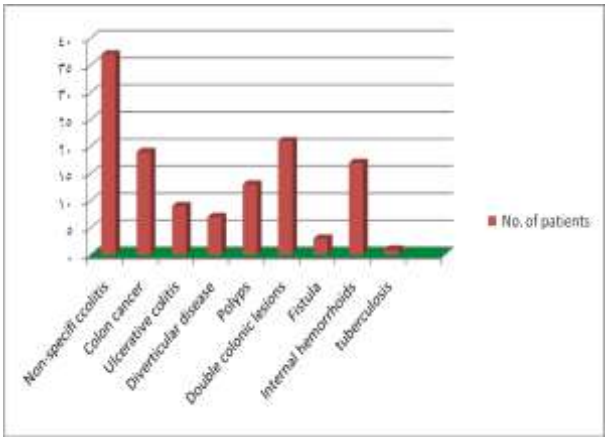

Figure ٣: Diagnostic pattern in study population.

DISCUSSION:

There is still some controversy regarding open-access endoscopic service versus a strict criteria for doing the procedure.[٩, ١٨, ١٩] Certainly, strict selection criteria for the procedure is found to miss patients with significant and potentially treatable colonic pathology.[٢٠]However, it is apparent that in order for a colonoscopy service to meet demand and retain a reasonable cost benefit ratio, selection of patients with suspected colonic disease is important. Clearly, the answer lies in a better selection of patients for the procedure based on the diagnostic yield. For a unit with relatively open access, and in an area where colonic diseases, such as diverticulitis, polyps, and inflammatory bowel disease is thought to be uncommon, colonoscopy is proved to be rewarding, as abnormal findings (٥٦,٧٪) were identified. The majority of indications evaluated for their diagnostic yields in this study are similar to those used in previous studies.[٩,١١,١٣,١٤,١٥,١٨,٢١,٢٢,٢٣]. In this study; the overall diagnostic yield of colonoscopy was(٥٦,٧٪) which is higher than that documented by Ghazawi et al. (Jordan) study of around (٢٧,٥ %) [٢١], (٢١٪) in a study conducted by Al-Shamali et al.(Kuwait)[٢٢],(٤٨٪)in a study by Kumar et al. (India) [٢٤] while it is lower than that of Zakaria et al[٢٣]. (Egypt) which was (٧٥٪). Lower abdominal pain was the primary indication for colonoscopy in (١٦,٥٪). of

patients. This produced a diagnostic yield of (٢٩,٧٢٪), of these patients no colonic adenocarcinoma was diagnosed. The results of a study conducted by Al-Shamali et al.(Kuwait)[٢٢], abdominal pain as the primary indication for colonoscopy in(٥٣٪) of the patients. This produced a diagnostic yield of (٧٪).Colonic adenocarcinoma was diagnosed in (٠,٣٪) of patients.

In this study the yield of lower gastrointestinal bleeding which represent (٢٣,٢٪) showed (٧١,١٥٪) abnormality. The most common diagnosis made was hemorrhoids were detected in (٤٥,٩٤٪) of cases. In a study by Al-Shamali et al. (Kuwait) [(٢٢)], the yield of lower gastrointestinal bleeding showed (٤٧٪) abnormality, bleeding per rectum was the commonest clinical presentation in(١٨,٤٪), the most common diagnosis made was inflammatory bowel disease. The yield of lower gastrointestinal bleeding showed (٢٥٪) in study conducted by Ghazawi et al., (Jordan) [(٢١)].

Diarrhea was the primary indication for colonoscopy in (١٨,٧٥٪) of patients, this produced a diagnostic yield of (٦١,٩٪), most common finding was nonspecific colitis, while in a figure reported by Al-Shamali et al. (Kuwait) [٢٢], the diagnostic yield (٣٦٪), the most common finding was inflammatory bowel disease, and nonspecific colitis. In developing countries where infective diarrhea is still common, selecting patients for colonoscopy is more difficult' various speculations have been made for this increase, among which is the western lifestyle, variations in dietary intake, including refined sugar and chocolate, as well as environmental factors[(٢٢)].

Constipation was the primary indication for colonoscopy in (١٤,٣ %) of patients, this produced a diagnostic yield of (٥٦,٢٥٪) and diverticulosis was detected in (٩,٤٥٪) of total abnormal results which is less than that revealed by Berkowitz et al.(١٢,٠٥٪) [٩,] this may due to variations in dietary intake, as well as environmental factors.

Alternation in bowel habits and weight loss was the primary indication for colonoscopy in (٦,٧ %) of patients. This produced a diagnostic yield of (٤٦,٦٪). Cancer was identified in (٣٣,٣٪) of patients, colitis (١٣,٣٪), by Berkowitz et al, the diagnostic yield in patients in the abnormal bowel habit subgroup, (e.g. diarrhea, constipation) was (٤٦,٨٪), most of the disorders comprised diverticular disease (٤٥. ٩٪), colitis (٢٤,٣٪), carcinoma was found in (١. ٣٪) of the total[(٩)].

In the study conducted by Al-Shamali et al.(Kuwait)[٢٢] ,surveillance was with a diagnostic yield of (١٧٪) . Recurrence of colonic carcinoma was seen in (٤,٥٪) of patients. Surveillance in this study was carried out in (١١,٦٪) of patients with a diagnostic yield of (٥٧,٦٩٪), the change of ulcerative colitis was the most frequently reported in (٢٦,٩ %) of patients. It is of interest that none of these patients were found to have colonic carcinoma or high grade dysplasia.

An open access to colonoscopic evaluation is ideal to rule out colonic disease. It is also of value to reassure the patient on more definitive grounds, but this requires specialized facilities and expertise. Patients with indications of high diagnostic yield should be subjected to lower gastrointestinal endoscopy on a priority basis. The probability of identifying a significant finding on colonoscopy is particularly higher when the indications for the procedure are judged to be appropriate by the guidelines, but a proportion of patients who undergo colonoscopy for an unlisted indication also have significant findings. However, to reduce a negative diagnostic yield, guidelines should be followed while performing lower gastrointestinal endoscopy. [(١٦, ٢٥, ٢٦)]

CONCLUSION:

-The major indications for colonoscopy procedure in this study were lower gastrointestinal bleeding, diarrhea and lower abdominal pain respectively.

-The highest diagnostic yields of colonoscopy procedure for lower gastrointestinal bleeding, diarrhea, while the lowest diagnostic yields for abdominal pain and (alternation in bowel habits and weight loss) respectively.

-The pattern of colonic pathology in this study was nonspecific colitis in the first followed by double colonic lesions, colonic cancer and colonic polyps respectively.

Recommendations:

١.Patients with indications of high diagnostic yield should be subjected to lower gastrointestinal endoscopy on a priority basis.

٢.Indications for colonoscopy should not be too strict to improve the diagnostic yield.

٣.The indications for the procedure should be judged by the appropriate guidelines.

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