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Diagnostic Yield of Colonoscopy

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Abstract

Background: Colonoscopy is the gold standard for diagnosis and screening of colorectal cancer. There is an increasing utilization of this gastroenterology service in recent years.

Aim: To study the diagnostic yield of colonoscopy in a metropolitan city of Nigeria.

Patients and method: A prospective study of all consecutive patients undergoing colonoscopy in a referral endoscopy facility in Port Harcourt metropolis of Nigeria between March 2014 and September 2017. Data collated included: age, sex, location/type of lesion found by colonoscopy and pathologic diagnosis. Statistical analysis was done using SPSS for Windows and Version 20.0 (Armonk, NY: IBM Corp).

Results: A total of 212 colonoscopies were performed in 210 patients. The age range was from 4 to 86 years; mean age of 53.5 ± 13.9 years. There were 148 males and 64 females; M: F ratio of 2.3:1. A total of 176 (83.0%) procedures had a positive diagnostic yield and the site distribution of pathologies included: anus/anal canal 128 (41.3%); recto-sigmoid 76 (24.6%); transverse colon 44 (14.4%). Haemorrhoids 112 (54.4%); diverticular disease 27 (13.1%) and polyps were frequent findings with multiple pathologies seen in 74 (34.7%) cases.

Conclusion: Colonoscopy has a high diagnostic yield in middle-aged population with a high rate of multiple pathologies seen. Diverticular disease is not uncommon among the studied population as traditionally reported.

become the procedure of choice for evaluation of lower gastrointestinal bleeding, colorectal cancer (CRC) screening, and polyp surveillance.(2-5)It allows for complete mural examination and management of diseases in the anus, rectum, colon, and terminal ileum. This procedure is cost effective as it can be used to obtain tissue (biopsy) and perform interventional procedures like total resection of lesion, haemostasis, dilatation etc.

An adequate knowledge of normal anatomy and its variants is central to the appreciation of pathological changes or abnormalities during colonoscopy. These pathologies include polyps, diverticula and tumours among other findings. A critical threshold standard is needed to ensure patient safety and successful colonoscopy. Some of these are gentle, minimal blind pushing, keeping the lumen within view, periodic and frequent withdrawal motions for straightening, and avoidance of mucosal whitening or reddening ("red out") by scraping or sliding by the wall of the colon [2]. Pain and incomplete colonoscopy are generally due to poor bowel preparation, loop or bowing formation and resultant mesenteric stretching.

Recent advancements in magnetic imaging have been helpful in facilitating colonoscopy by detecting looping and facilitating straightening and shortening maneuvers [3]. The utilization of good basic technique and an appreciation with application of standardized approach to difficult intubation (redundancy, difficult sigmoid, poor tolerance to sedation) help to yield improved maneuverability and successful colonoscopy [4]. Colonoscopy is yet to become routine in many developing countries as there are few endoscopy facilities and trained personnel. This study is the first prospective study on colonoscopy from Port Harcourt a metropolis in Nigeria- a populous African country.

This study aims to assess the diagnostic yield of colonoscopy from a city in Niger –Delta region of Nigeria.

Keywords: Colonoscopy; Diagnostic yield; Port Harcourt; Nigeria

Introduction

Colonoscopy became increasingly popular from seventies of the last millennium [1]. With advancements in optics, imaging modalities, mechanics, techniques, and instrumentation it has

Patients and Methods

Study setting

This study was conducted in a referral endoscopy facility in Port Harcourt in Niger Delta region of Nigeria from March 2014 to October 2017.

Study design

This is a prospective study of all consecutive patients referred for colonoscopy. A proforma was used to record demographics, indication for procedure, location, type of lesion found by colonoscopy and the pathologic diagnosis. The diagnostic yield of procedure was defined by the detection of pathology including incidental findings. Relevant approval was obtained from the Ethical committee of the establishment. An informed consent was also obtained from patient or guardian for minors according to Helsinki declaration 1975.

Pre-procedure preparation

All patients had a 2-day dietary restriction to fluids/fluid diet preceding morning of procedure. There was prior bowel cleansing using polyethylene glycol PEG 3350 or Sodium picosulphate/citrate or combination of bisacodyl and castor oil based on availability of stock. Conscious sedation with intravenous Benzodiazepine (diazepam 2.5-5 mg) and pentazocine 30mg was administered to all patients before procedure. The endoscopy equipment used was Karl Storz (Germany) video-colonoscopy 13925PKS light source/pump and camera control unit.

Procedure

All the procedures were performed by the same endoscopist (ERO). The colonoscope was inserted after a digital rectal examination with patient in left lateral position. A change to supine, right lateral or prone position was occasionally done as needed. The patients were observed for a minimum of 30 minutes before discharge. They were counseled to resume normal diet and call to report any complications.

Statistical analysis

The data was inputted into Statistical Package for Social Sciences, INM SPSS for Windows and Version 20.0 (Armonk, NY: IBM Corp). The continuous variables are presented as mean $\pm$ standard deviation (SD) and categorical variables as percentages. These variables were further analyzed by Chi-square and Fisher's exact test appropriate for statistical significance of observed differences for categorical variables.

Results

During the study period 212 colonoscopies were performed in 210 patients. The age range of studied patients was from 4 years to 86 years (**Figure 1**); the mean age was 53.5 ± 13.9 years. There were 148 males and 64 females; M: F ratio of 2.3:1. Patients in the 6th decade of life had the highest frequency of procedures.

The leading indications for colonoscopy were bleeding per rectum 119 (55.9%), lower abdominal pains 30 (14.1%) and change in bowel habit 27 (12.7%), screening 10 (4.7%), positive faecal occult blood test 6 (2.8%) (**Table 1**).

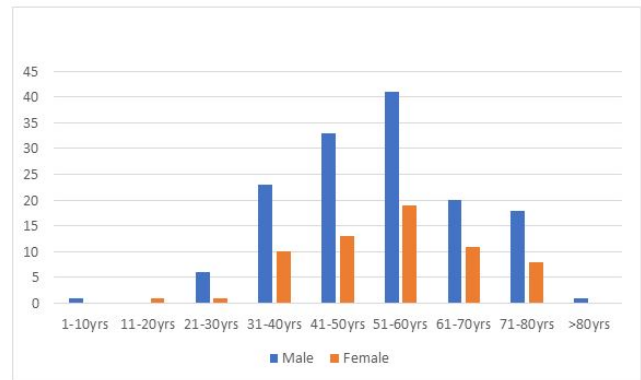


Figure 1 Age distribution of patients in the study.

Table 1 Relationship between indication and diagnostic yield of colonoscopy.

Indication	Number	Diagnostic yield	Percentage
Bleeding per rectum	119	109	51.40%
Lower abdominal pain	30	16	7.50%
Change in bowel habit	27	17	8.00%
Surveillance	2	0	0%
Screening	10	1	0.30%
Unexplained anaemia	2	2	0.90%
Positive faecal occult blood test	6	6	2.80%
Tenesmus	2	2	0.90%
Flatulence	3	1	0.50%
Others	11	4	1.90%
Total	212	159	75.00%

The pathologies seen included: haemorrhoids 121 (57.1%); polyps 38 (17.9%); diverticulosis/diverticular disease 31 (14.6%), and colorectal tumour 20 (9.4%). A normal study was recorded in 36 (17.0%) cases thus giving a diagnostic yield of 83.0%. The colonoscopic finding was related to primary indication in 159 (75%) (**Table 1**). Pathologies seen in 20 (9.4%) cases were unrelated to the primary indication for colonoscopy (incidental findings). Seventy-four cases (34.7%) had multiple pathologies with more than 4 pathologies in different sites seen in 18 cases (8.5%).

The anus and anal canal were the most common sites involved 128 (41.3%), others were recto-sigmoid 76 (24.7%) and transverse colon 44 (14.2%) (**Table 2**). The pathologies seen are as shown in **Figure 2**.

Histopathologic diagnosis from 67 biopsies taken is as shown in **Table 3**. Chronic non-specific colitis was the leading histopathologic diagnosis -20 (29.9%). The biopsy of detected

polyps in this study revealed more than half of these histologically reported as inflammatory polyps.

Table 2 Site distribution of lesions.

Location of lesion	Frequency	Percentage (%)
Anal canal and anus	128	41.3
Rectum	43	13.9
Sigmoid colon	33	10.8
Descending colon	26	8.4
Transverse colon	44	14.2
Ascending colon	32	10.3
Caecum	4	1.3
Total	310	100

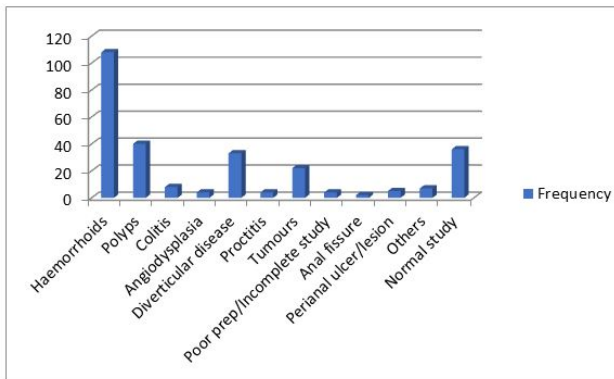


Figure 2 Colonoscopic findings in study population.

Discussion

Colonoscopy has emerged as the procedure of choice for evaluation of lower gastrointestinal bleeding, colorectal cancer (CRC) screening, and polyp surveillance with its ability to allow for therapeutic intervention [5-7]. In this study a high diagnostic yield of 83% was recorded for this endoscopic procedure as no abnormality was observed in 36 cases (17.0%). These negative results were as valuable as the positive observations as it provided relief to both the patient and the managing physician [8]. Some studies from different parts of Nigeria have reported diagnostic yield between 70% to 80% [9,10]. In Egypt and Iran, reports of 72% and 65% diagnostic yield respectively have been recorded for colonoscopy [11,12]. Across Europe, significant pathologies (cancer, adenomatous polyps, angiodysplasia, and new diagnoses of inflammatory bowel disease) is reported in 25% of colonoscopies [13]. There is a significantly greater rate of neoplasia detection during colonoscopy with time dependent withdrawal [14]. A careful examination with minimum withdrawal time of at least 8 minutes after the endoscope has been navigated to the caecum was adopted in this study increasing the chance of pathology detection. In addition, only

few centers are providing endoscopic services in the city where the study was undertaken as such only patients with established diseases are likely to present for the procedure.

Table 3 Histopathologic diagnosis of cases.

Histopathology	Frequency (%)
Unremarkable mucosa	1 (1.5)
Polyps	
Inflammatory	16 (23.9)
Hyperplastic	4 (6.0)
Adenomatous	11 (16.4)
Inflammatory disease	
Non-specific colitis	20 (29.9)
Ulcerative colitis	1 (1.5)
Radiation proctitis	1 (1.5)
Colorectal tumour	
Adenocarcinoma	12 (17.9)
Non-Hodgkins lymphoma	1 (1.5)
Total	67 (100)

The fourth, fifth and sixth decades of life were the most frequent age groups of patients in increasing order of frequency with a male predominance. In a multi-centre colonoscopy study in another metropolitan city in Nigeria, the fourth decade of life followed by the fifth were the most frequent age of patients and a male predominance was similarly reported [10]. Owing to lack of adequate facilities and expertise for colonoscopy service in Africa patient selection according to diagnostic yield has been suggested against open access [15]. From our findings, colonoscopy is strongly recommended in middle- aged patients with symptomatic colonic pathologies. The five major indications for colonoscopy were rectal bleeding, change in bowel habit, abdominal pain, positive faecal occult blood test and routine screening. The anus and anal canal had the most frequent pathology - haemorrhoids (**Table 2**). Next, was the rectosigmoid area which had over one fifth of the pathologies recorded. This trend is like findings in a study from the UK which showed a high correlation of colonoscopy pathology site with surgery findings [16].

The most common pathologies seen in decreasing order of frequency were haemorrhoids, polyps, diverticular disease and colon cancer. Multiple pathologies were a significant observation in almost one quarter of the study population. In a similar study from Ghana, the three most common pathologies recorded were haemorrhoids, tumours and proctocolitis (32.3%, 9.0% and 4.2% respectively) [17]. A single case of ulcerative colitis was recorded during the study period and no case of Crohn's disease was seen. This confirms that inflammatory bowel disease IBD is still rare in Nigeria with few reports of sporadic cases [18,19]. However, in Nile Delta, Egypt, IBD has been reported in 25% of cases, haemorrhoids

18% and diverticulosis 2% [11]. Surprisingly, diverticular disease, which is more common to western population attributable to a low residue diet pattern, was the 3rd leading pathology recorded in our metropolitan study. Results of similar studies confirm a shift in the epidemiology of this disease in Africa [9,10,20]. It is note-worthy that no case with clinical suspicion or endoscopic diagnosis of ischaemic colitis was observed in this study.

A limitation of this study is the non-assessment of sensitivity or specificity of colonoscopy as further complimentary investigations was not evaluated. Also, there was a high rate of more than 72-hour delay in the presentation of the referred cases with bleeding per rectum which may lower the diagnostic yield in these delayed cases. Although, colonoscopy is generally safe, it is an invasive procedure that can rarely be complicated by perforation, hemorrhage and infection [21,22]. None of these complications was recorded in this study. There is the need for the relevant expertise and meticulous safety measures to be undertaken in this invaluable diagnostic and therapeutic modality for colonic pathologies.

Conclusion

Colonoscopy is a very useful investigation for the lower digestive tract with a high diagnostic yield in patients with lower gastro-intestinal symptoms especially in the middle- age population. There is an observed shift in epidemiology of diverticular disease in this subset of Sub-Saharan African population studied.

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