

Characteristics of the Patients Undergoing Colonoscopy in a Single Center within an 8-year Period

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Received date: April 14, 2017; Accepted date: May 05, 2017; Published date: May 12, 2017

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Abstract

Aim: To evaluate patient characteristics by reviewing colonoscopy procedures performed within an 8-year period in the endoscopy centre of a training and research hospital.

Methods: Colonoscopy procedures that were performed for various indications between 2002 and 2009 in the endoscopy unit of our hospital were retrospectively evaluated. Of 3035 colonoscopy procedures, 2831 were included in the analysis. In addition to demographic characteristics of the patients, presence and localization of colorectal masses, presence of inflammatory bowel disease, frequency of presence of hemorrhoids, diverticula, polyps, and other diseases, as well as complications were recorded.

Results: The mean age of the patients (male, 50.5%) was 54.36 ± 15.05 years (range, 16-93 years). While a pathological finding was determined in 1512 (53.4%) colonoscopy procedures, 1319 (46.6%) colonoscopy procedures were reported as normal. Concerning complications during examinations, perforation was encountered in two patients and major bleeding was not determined in any of the patients. The most common diagnoses were polyps (15.9%) and hemorrhoids (15.9%), followed by colorectal mass (12.9%), diverticula (6.8%), and inflammatory bowel disease (5.6%).

Conclusion: The fact that colorectal masses ranked third among the colonoscopic diagnoses suggested that cancer screening programs should be handled nationally.

Keywords: Colonoscopy; Colorectal masses; Diverticula; Polyps

Introduction

Colonoscopy is a beneficial method in the evaluation of symptoms and abnormal radiological findings of lower gastrointestinal system as well as in the diagnosis and follow-up of colon cancers, and its usage for therapeutic purposes is gradually increasing [1,2]. Colonoscopy, which is accepted as the gold standard method for the examination of colon mucosa, allows for both performing a biopsy for diagnostic purposes and interventions (polypectomy, stopping bleeding, etc.) for the lesions [3,4]. On the other hand, the success of a colonoscopy depends on a good preparation phase and largely on the skills of the team performing the procedure [5,6].

Colorectal cancers are the second leading causes of deaths from cancer worldwide [7]. Standard criteria for colorectal cancer screening programs are not available yet. Nevertheless, it has been reported that faecal occult blood testing and colonoscopy screening in individuals aged over 50 years contribute to the decrease in cancer mortality [8,9]. Although diagnostic yield of barium enema examination is close to that of colonoscopy in advanced stage colon cancers, it may be inadequate in early colon cancers and polyps [10]. Colonoscopy has numerous indications and advantages including correct interpretation of overfilling or filling defects on a barium enema, investigation of the

reasons for unexplained gastrointestinal bleeding, iron deficiency anaemia, and chronic diarrhoea, polypectomy, biopsy, endoscopic treatment of bleeding lesions, removal of foreign bodies, and balloon dilatation for stenosis or stent implantation [11]. Colonoscopy-related complications may develop due to sedation or to the procedure itself. The most common complications are perforation and hemorrhage [12,13]. Most of the serious complications have been reported to occur not during diagnostic interventions but during therapeutic procedures such as polypectomy and dilatation [14].

The present study aimed to evaluate patient characteristics by reviewing colonoscopy procedures performed within an 8-year period in the endoscopy centre of a training and research hospital.

Materials and Methods

Colonoscopy procedures that were performed for various indications between 2002 and 2009 in the endoscopy unit of our hospital were retrospectively evaluated. Medical records gathered on computer. There were totally 3035 colonoscopy procedures. Of these procedures, 143 were reported as "inadequate colon preparation" due to the presence of fecal material in such an amount that could hinder visualization of colon mucosa, whereas 61 were reported as "incomplete colonoscopy" because of the failure in completing colonoscopy procedure due to various reasons; thus, these were

excluded from the evaluation. Consequently, 2831 colonoscopy procedures were included in the analysis. In addition to demographic characteristics of the patients, presence and localization of colorectal masses, presence of inflammatory bowel disease (IBD), frequency of presence of hemorrhoids, diverticula, polyps, and other diseases, as well as complications were recorded.

Statistical analysis

The Statistical Package for the Social Sciences (SPSS, Inc., Chicago, IL, USA) version 11.5 was used for statistical analysis. In addition to the descriptive statistics, Pearson's chi-square test and Fisher's exact test were used for group comparisons. A p-value of <0.05 was considered statistically significant.

Results

The general characteristics of the patients are demonstrated in Table 1.

| Characteristics | |
|---|-----------------------|
| Age, year | 54.36 ± 15.05 (16-93) |
| Gender | |
| Male | 1430 (50.5) |
| Female | 1401 (49.5) |
| Number of colonoscopy procedures according to the years | |
| 2002 | 164 (5.8) |
| 2003 | 296 (10.5) |
| 2004 | 275 (9.7) |
| 2005 | 307 (10.8) |
| 2006 | 396 (14.0) |
| 2007 | 232 (8.2) |
| 2008 | 480 (17.0) |
| 2009 | 681 (24.1) |
| Data are presented as mean ± standard deviation (minimum-maximum) and n (%), where appropriate. | |

Table 1: General characteristics of the patients undergoing colonoscopy.

While a pathological finding was determined in 1512 (53.4%) colonoscopy procedures, 1319 (46.6%) colonoscopy procedures were reported as normal. Distribution of diagnosis after colonoscopic examination is demonstrated in Table 2.

| Diagnosis* | n (%) |
|-----------------|------------|
| Hemorrhoids | 451 (15.9) |
| Polyps | 451 (15.9) |
| Colorectal mass | 366 (12.9) |
| Rectosigmoid | 242 (8.5) |

| | |
|---|-----------|
| Descending colon | 32 (1.1) |
| Transverse colon | 16 (0.6) |
| Ascending colon | 25 (0.9) |
| Cecum | 51 (1.8) |
| Diverticula | 193 (6.8) |
| Inflammatory bowel disease | 158 (5.6) |
| Rectitis | 48 (1.7) |
| Other | 92 (3.2) |
| Anal fissure | 32 (1.1) |
| Colovesical fistula | 30 (1.1) |
| Dolichocolon | 10 (0.35) |
| Colon stenosis | 8 (0.28) |
| Angiodysplasia | 4 (0.14) |
| Spastic colon | 3 (0.11) |
| Rectal ulcer | 2 (0.07) |
| Parasites | 2 (0.07) |
| Lipoma | 1 (0.04) |
| *More than one diagnosis is present in some examinations. | |

Table 2: Distribution of the diagnoses established in colonoscopic examinations.

Concerning complications during examinations, perforation was encountered in two patients and major bleeding was not determined in any of the patients. Twenty-six patients were previously operated on due to colorectal cancer and they underwent colonoscopy for control.

| Diagnosis | Male (n=1430) | Female (n=1401) | p-value |
|------------------------------|------------------|--------------------|---------|
| Hemorrhoids | 251 (17.6) | 200 (14.1) | 0.018 |
| Polyps | 260 (18.2) | 191 (13.4) | 0.001 |
| Diverticula | 108 (7.6) | 85 (6.0) | 0.119 |
| Inflammatory bowel disease | 85 (5.9) | 73 (5.1) | 0.401 |
| Rectosigmoid mass | 135 (9.4) | 107 (7.5) | 0.076 |
| Mass in the descending colon | 18 (1.3) | 14 (1.0) | 0.4 |
| Mass in the transverse colon | 7 (0.5) | 9 (0.6) | 0.763 |
| Mass in the ascending colon | 11 (0.8) | 14 (1.0) | 0.511 |
| Mass in the cecum | 24 (1.7) | 27 (1.9) | 0.615 |
| Rectitis | 25 (1.7) | 23 (1.6) | 0.943 |
| Data are presented as n (%) | | | |

Table 3: Distribution of colonoscopic diagnoses among genders.

The result of colonoscopic examination was normal in 16 of these patients, whereas relapse or a new tumor was detected in another segment of the colon in 10. The diagnoses of polyps and hemorrhoids were significantly more frequent in the male patients than in the female patients (Table 3).

While IBD and rectitis were more frequent between the ages 15 and 64 years, polyps, diverticula, recto-sigmoid mass, mass in the descending colon, and mass in the cecum were more frequent at the age of 65 years and older (Table 4).

| Diagnosis | 15-64 years (n=2045) | ≥ 65 years (n=786) | p-value |
|------------------------------|----------------------|--------------------|---------|
| Hemorrhoids | 326 (15.9) | 125 (15.9) | 0.988 |
| Polyps | 290 (14.2) | 161 (20.5) | <0.001 |
| Diverticula | 93 (4.5) | 100 (12.7) | <0.001 |
| Inflammatory bowel disease | 128 (6.3) | 30 (3.8) | 0.007 |
| Rectosigmoid mass | 142(6.9) | 100 (12.7) | <0.001 |
| Mass in the descending colon | 16 (0.8) | 16 (2.0) | 0.005 |
| Mass in the transverse colon | 11 (0.5) | 5 (0.6) | 0.781 |
| Mass in the ascending colon | 19 (0.9) | 6 (0.8) | 0.763 |
| Mass in the cecum | 30 (1.5) | 21 (2.7) | 0.031 |
| Rectitis | 41 (2.0) | 7 (0.9) | 0.047 |
| Data are presented as n (%) | | | |

Table 4: Distribution of diagnoses among age groups.

Discussion

Colonoscopy is the method of choice in the diagnosis of majority of the colonic diseases and in the treatment of some [15]. Reported increase in the incidence of colorectal cancers in recent years has led to an increase in screening programs utilizing colonoscopy for early diagnosis to reduce cancer mortality [16,17]. In the present study as well, it was determined that the number of colonoscopy procedures increased in time; while 5.8% of the procedures were performed in 2002, 24.1% were performed in 2009. The mean age of the patients evaluated was 54 years with the number of females and males close to each other. Of the colonoscopy procedures, the findings were normal in 46.6%. In a study from the United Kingdom, in which 9223 colonoscopy procedures were evaluated at 68 endoscopy units, colonoscopic examination findings were reported to be normal in 42.1% of the patients [18]. In the same study, the most common diagnosis was reported as polyps (22.5%), followed by diverticular disease (14.9%); IBD and carcinoma were determined in 13.9% and 3.8% of the patients, respectively [18]. In the present study, the most common diagnoses were polyps (15.9%) and hemorrhoids (15.9%), followed by colorectal masses (12.9%), diverticula (6.8%), and IBD (5.6%). Among the studies reported from different regions of Turkey, Tamer et al. [19] reported that 29.2% of the findings of lower gastrointestinal endoscopies were normal and hemorrhoids were the most common diagnosis at a rate of 33.4%. In that particular study, polyps, ulcerative colitis, diverticula, and colorectal cancer were detected by 14.1%, 4.7%, 4.1%, and 3.7%, respectively. Yılmaz et al. [20]

retrospectively evaluated 322 colonoscopic examinations and reported normal findings in 49.7%. They reported the most common diagnoses as hemorrhoids (17.7%), polyps (14.9%), ulcer (12.4%), and masses (8.4%). It has been suggested that the diagnostic yield of colonoscopy and probability of determining a disease depend on the appropriateness of evaluation system and indication, as well as on the physician's skill [21,22]. Hemorrhoid is a common condition among general adult population and its prevalence has been reported between 4% and 40% in the general population [23-25]. It has been reported that pregnancy is a predisposing factor for hemorrhoids; however, hemorrhoids spontaneously regress after delivery and that the age of peak prevalence is 45-65 years for both genders [26]. Presence of hemorrhoids, which was the most common diagnosis in the present study, was significantly higher in the males undergoing colonoscopy than in the females undergoing colonoscopy. There was no difference between the age groups under and over 65 years in terms of frequency of hemorrhoids. Lee et al. [27] conducted a nationwide population-based study and concluded that there was a significant association between the presence of hemorrhoids and risk of developing colorectal cancer in the long-term. In the present study, colorectal masses were detected less frequently in the patients with hemorrhoids than in those without hemorrhoids. One of the underlying reasons for this finding was that the possibility of not recording diagnosis of hemorrhoids by deeming it less important in the patients for whom a mass was detected. The second possibility could be the relatively decreased rate of detecting mass due to excision of precancerous polyps or adenomas during colonoscopy or rectoscopy procedure previously performed for patients with hemorrhoids. For this purpose, evaluation of large series of patients undergoing colonoscopy for the first time is needed. In the present study, polyps were the other lesions detected at the same prevalence with hemorrhoids. Presence of polyps was determined more frequently in the male patients than in the female patients and in the patients aged ≥ 65 years than in those aged <65 years. It has been suggested that colorectal cancers could be prevented by early diagnosis and minimal invasive treatment of precancerous polyps [28,29]. The present study found no difference between the patients with and without polyps in terms of the rate of detecting a colorectal mass. In the present study, a mass was detected in 12.9% of the patients via colonoscopy, being most prevalently in the rectosigmoid region (8.5%). The rate of detecting a colorectal mass was not found to be different between the male and female patients. The findings of the present study confirmed the hypotheses that the right colon cancers, which are less prevalent, are relatively more common at young ages, whereas the left colon cancers, which are more prevalent, are classically more common at advanced ages. There is a consensus on screening of the individuals aged between 50 and 70 years via colonoscopy at 10-year intervals for early diagnosis of colorectal cancers [30,31]. Cancer screening programs utilizing colonoscopy are implemented in many countries and a decrease is anticipated in the incidence of colorectal cancers in years [31,32]. In the present study, diverticular disease was the fourth frequent disease detected by colonoscopy. The prevalence of diverticular disease has been reported to increase with age [33]. The present study demonstrated that the frequency of diverticula was higher in the patients at the age of ≥ 65 years than in those at the age of 15-64 years (12.7 vs. 4.5, p<0.001), whereas it did not differ between the male and female patients. In a large series (n=23,508) in which colonoscopy-related complications were evaluated, the frequencies of bleeding, perforation, and abdominal pain were reported as 0.21%, 0.1%, and 0.09%, respectively [34]. In the same series, mortality rate in 30 days following colonoscopy was 0.83% and the procedure-related death was considered in only three cases (0.01%) [34]. A study from

the United Kingdom, which evaluated 9223 colonoscopy procedures [18], reported that only half of the patients remembered being informed about possible adverse events before the procedure. In that particular study, six patients were reported to require admission due to rectal bleeding after colonoscopy, the overall perforation rate was reported as 1:769, and colonoscopy was determined to be the likely factor in six deaths occurred within 30 days of the procedure. In their study, Yilmaz et al. [20] observed one perforation in 322 colonoscopy procedures; however, no mortality was reported. Tamer et al. [19] reported no complications in the patients during or after the colonoscopy procedure. In the present study, perforation occurred only in two patients during examination; however, major bleeding was not determined. The major limitations of the present study were the lack of histopathological diagnoses of the patients in the evaluation and the lack of out-hospital follow-up of the patients after the procedure for likely complications. The results of our study should not be considered as a cancer screening program. The results of our study should not be considered a cancer screening program. We were in a group of symptomatic patients, not just asymptomatic patients. We think that our study may be a guide to cancer screening program. The fact that colorectal masses ranked third among the colonoscopic diagnoses suggested that cancer screening programs should be handled nationally.

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