

Quality and Complications of Colonoscopy in Ahvaz Jundishapur University

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Abstract

Introduction: Colonoscopy is the most effective method for screening and diagnosing the colorectal cancers. Using colonoscopy has expanded dramatically in recent years due to good efficacy and safety profile. The aim of this study is to evaluate the rate of bowel cleansing by routine prep regimen and quality of performing colonoscopy in outpatient clinics of Ahvaz Jundishapur University with the international standards of quality criteria.

Method: In a 6-months period, data of all patients who were candidate for elective outpatient colonoscopy including quality of bowel prep, polyp detection rate and any potential complication collected by a questionnaire and analyzed.

Results: Totally, 239 (113 males, 125 females) patients enrolled to this study. Patients' mean ages were 44 ± 16 years (males) and 44.5 ± 16 years (females). In terms of geographic distribution, 59.1% resided in the center of the province followed by 40.1% who were residents of the other areas of province. The most common colonoscopy findings in male patients were anal hemorrhoids (15.7%), proctitis (11%), polyps (10.2%), IBD (5.6%) and cancer (4.6%). Among female patients the findings included anal hemorrhoids (16.7%), proctitis (11%), polyp (8.3%), IBD (6%) and cancer (4.6%), Melanosis coli and anal fissure (3.3%). The most common reasons for referring to colonoscopy among male patients include rectal bleeding (31.5%), Abdominal pain (24.3%), diarrhea (9%) and constipation (7.2%); in women include rectal bleeding (27.2%), Abdominal pain (25.6%), constipation (12.8%), diarrhea (10.4%) and anemia (8.8%).

Colon prep was appropriate in 40.5%, inadequate in 36.8% and poor in 22.8% of cases. The rate of cecal intubation was 72.5%. 1.3% of patients experienced minor complication such as pain and abdominal swelling after colonoscopy with no major complication at all.

Conclusion: It seems that our routine regimen for colon prep (PEG 280gr + Bisacodyl TDS) is inadequate for our population and can potentially decrease the quality of our outpatient's colonoscopy.

Keywords: Colonoscopy; Complication; Cecal intubation

Abbreviations: ADR: Adenoma Detection Rate; IBD: Inflammatory Bowel Disease; SRUS: Solitary Rectal Ulcer Syndrome; ASA: American Society of Anesthesiologists; FAP: Familial Adenomatosis Polyposis syndrome.

Introduction

Colonoscopy includes the endoscopic evaluation of large bowel and terminal ileum by fiber optic cameras located on a flexible tube which is inserted from anal canal. This procedure is using for diagnosis of variety of disorders including ulcers or polyps by thorough visualization of colon lumen and enable the ability of performing tissue sample biopsy and or treatment of lesions suspicious to malignancy [1,2]. Today's its usage has expanded dramatically due to availability and safety profile

and resulted in an evolution in diagnosing and management of colorectal disorders [3-11] and subsequently by popularity of this procedure, a substantial number of colorectal cancer deaths could be prevented [12].

Colonoscopy has been the most effective procedure for screening and detection of colorectal cancers [3-8] and according to high efficacy, importance of issue and general acceptance of national guidelines for screening and detection of colorectal cancer, its usage have has a dramatic expansion [8-10]. The

quality of colonoscopy is defined based on multiple items including adenoma detection rate (ADR) in at least 25% of male and 15% of female participants (among more than 50 y asymptomatic candidates during screening colonoscopy), the cecal intubation rate $\geq 95\%$ and withdrawal time of ≥ 6 minutes [5-8,13-15].

Indeed the colonoscopy is the main part of all of the colorectal screening programs as the first part or complementary of other procedures and approaches but there are some concerns about the quality of colonoscopy due to limitation of sources including staff, equipment and facilities [2]. The aim of this study is to evaluate the rate of bowel cleansing by routine prep regimen and quality of performing outpatient colonoscopy in Golestan Hospital of Ahvaz Jundishapur University as a referral center and compare the results with global standards.

Method

In this cross sectional prospective study, during a 6 months period from February to July 2013 all of the candidates for performing colonoscopy in endoscopy ward as outpatient included and evaluated. The cleansing regimen used for colon prep in this center included 280gr PEG plus tablet Bisacodyl q8h which started 48h before procedure. All of the procedures performed by well experienced professors of GI department. During the procedure, conscious sedation was achieved by gastroenterologist and by using pethidine and midazolam. Physical status of patients based on American Society of Anesthesiologists (ASA) classification were 1 or 2 and all of the procedures performed as outpatients.

During this period overall 239 colonoscopy performed and the DATA collected by filling a questionnaire under supervision of the gastroenterologist. The collected items included demographic characters of patients, quality of colon prep, rate of cecal intubation, reason of referring for performing colonoscopy, colonoscopy findings and final diagnosis and complications of procedure if any at all. Then the collected DATA gathered and analyzed by SPSS software version 19. The descriptive statics such as standard deviation used for quantitative variables and for qualitative variables we used T test and Chi square method.

Findings

In this study overall 239 participants with average age $44.2 \pm 16.3y$ (range 13 to 85) candidate for performing colonoscopy as outpatient during a 6 months period included, of them 113 cases (47.3%) were male. Weight of cases range from 40 to 120kg with average of 74.3 and 68.8kg among male and females respectively (Table 1). 59.1% of participants were from capital city of province, Ahvaz, and the rest of patients were from other cities. The most common complains of patients include rectorrhagia (28.8%, 35 male, 34 female), abdominal pain (24.6%, 27 male, 32 female), constipation (10%, 8 male, 16 female), diarrhea (9.6%, 10 male, 13 female) and anemia (5.5%, 2 male, 11 female) (Table 2).

The quality of colon prep was optimal in only 40.5% and in 36.6% and 22.8% of cases the prep of colon was inadequate and or poor respectively. The cecal intubation rate was 72.5%. There was not any major complication including perforation

Table 1: Demographic characters of participants.

Sex	Male	Female
Number	113 (47.3%)	126 (52.7%)
Average age (y)	44.4	44.08
Average Weight (kg)	74.3	68.8

Table 2: The most common complains of candidates for outpatient colonoscopy.

Complain	Number (percent)	Male	Female
Rectorrhagia	69 (28.8%)	35	34
Abdominal pain	59 (24.6%)	27	32
Constipation	24 (10%)	8	16
Diarrhea	23 (9.3%)	10	13
Anemia	13 (5.4%)	2	11
Bloating	6 (2.5%)	3	3
Surveillance for Colon Cancer	6 (2.5%)	4	2
Anal Pain	6 (2.5%)	4	2
Bowel Habit Change	6 (2.5%)	3	3

Table 3: Colonoscopy final diagnosis among participants, the sum of findings is more than 100% because some cases vdiagnosed as multiple items.

Colonoscopy Finding	Number (%)	Male	Female
Normal	120 (50.2)	52	68
Hemorrhoid	109 (45.7)	53	56
Proctitis	22 (9.2)	11	11
Polyp	21 (8.8)	11	10
Cancer	8 (3.3)	5	3
Anal Fissure	7 (2.9)	3	4
IBD	7 (2.9)	6	1
Diverticulosis	6 (2.5)	3	3
Melanosis Coli	4 (1.7)	1	3
SRUS	3 (1.3)	3	0

IBD: Inflammatory Bowel Disease; SRUS: Solitary Rectal Ulcer Syndrome

or hemorrhage and only 1.3% of participants reported minor complications such as abdominal pain or swelling. 8.1% of patients (8 male, 11 female) suffered external anal hemorrhoid and internal hemorrhoid reported in 37.6% of cases (45 male, 45 female). The adenoma detection rate (ADR) was 8.8% (Table 3). In evaluation of patients past medical history, 17 cases were diabetic (7.1%), 12 had history of ischemic heart disease (5%) and 4 (1.7%) reported history of cancer disease.

Statistical analysis of colonoscopies reports revealed that 50.2% of cases had normal colonoscopy (46 male, 63 female). Other diagnostic reports of colonoscopies in descending order included anal hemorrhoid 45.7% (53 male, 56 female), proctitis 9.2% (11 male, 11 female), colon polyp 8.8% (11 male, 10 female)

and anal fissure 2.9% (3 male, 4 female) (Table 3). Presence of internal or external anal hemorrhoid were unrelated to sex of participants ($P = 0.79$ & 0.63 respectively).

Discussion

Almost all of the guidelines introduced colonoscopy as a reliable and valid method for screening of population more than 50y and this procedure is the major part of standard evaluation for possibility of colorectal neoplastic disorders in conditions such as familial adenomatous polyposis syndrome (FAP), nonpolypoid colon cancers and presence of occult or overt blood in stool among subjects less than 50y [9,10,16-18]. Today colonoscopy has been accepted worldwide and applied routinely for screening of colorectal cancer but accuracy of this procedure in detection of advanced adenomatous or neoplastic lesions is still remained a major concern and it is clear that relying to colonoscopy necessitate strict commitment to standard criteria which have been defined for quality of colonoscopy such as adenoma detection rate (ADR) or cecal intubation [1,19-24].

Limitation of sources such as staff and or equipment have been resulted some concerns about quality of performing colonoscopy in many endoscopy centers [2]. These limitations were also present in our center. According to importance of performing standard colonoscopy and absence of such an investigation in region, this study performed to evaluate the quality of this procedure among one of the referral centers in Ahvaz Jundishapur University. As many other centers, the real quality of performing colonoscopy have not been evaluated and it was not clear that if there is any gap between standard global criteria and the real ones. For this reason, during a 6 months period all of the candidate for performing colonoscopy as outpatient evaluated for quality of care by filling a questionnaire and the items such as polyp detection rate, cecal intubation, final colonoscopy report and complications of procedure if any recorded. Due to some limitation, the withdrawal time of scope as another criterion for quality and accuracy did not measured. All of the procedures performed by experienced gastroenterologists.

During this period, the most common reasons for referring patients for performing colonoscopy included rectorrhagia and abdominal pain and only 2.5% of cases have been referred for surveillance and screening (Table 2). This low rate of performing screening colonoscopy further emphasizes that we should try to raise the general awareness about importance of performing screening colonoscopy and early detection of malignant and pre malignant colonic lesions by using press and media. The most common complications of colonoscopy included post procedure abdominal pain or swelling and there was not any major complication such as bleeding or perforation. This is in concordance with other studies that introduce the colonoscopy as a safe procedure [25] even in this regards full prep and avoidance of over sedation, unnecessary excess amount of air pressure is important [26,27].

The quality of colon prep was optimal in only 40.5% of cases and in 36.6% the prep was inadequate while 22.8% of participants had poor prep. This low rate of optimal colon prep directly can directly affect the quality of performing colonoscopy

and cecal intubation rate. Overall the cecal intubation rate was 72.5% while the optimum and acceptable cecal intubation rate reported to be about 90 to 95% [28] and an observational study from South Korea reported average cecal intubation rate of about 83.9% [29]. One of the potential reasons for lower cecal intubation rate among participants of this center could be low rate of optimal colon preparation [29-32] as reported in only 40.5% of cases. The routine cleansing regimen of center included 280 gr PEG + Bisacodyl tablet every 8h that probably could be inadequate in this region. One other possible cause could be inadequate explanation for participant about how to use these medication and importance of consuming adequate water and fluids before colonoscopy [33-37]. The compliance of the patient to the preparation instructions has been considered to be closely associated with the success of the procedure and the importance of education regarding adequate bowel preparation has been emphasized [38].

On the other hand the adenoma detection rate (ADR) as an important criteria for quality of performing colonoscopy which is inversely associated with the risks of interval colorectal cancer, advanced-stage interval cancer, and fatal interval cancer [39], was 8.8% that is lower than global accepted range which is reported 14.2 to 27.4% (optimum 20 to 25%) [40,41]. This item is directly related to quality of colon prep, withdrawal time, experience of operator and quality of scope [41]. The potential explanation of this low rate of ADR, again could be poor prep of participants. We can use this item as an alarming sign to be restrict about optimization of colon prep and lower the threshold for cancelation of procedure in case of inadequate colon prep.

Conclusion

It seems that our routine regimen for colon prep including 280gr PEG + Bisacodyl q8h, is inadequate and this item directly affect the quality of our procedures. On the other hand one potential cause could be unawareness of our patients about how to use their medication properly. We recommend this study be repeated by using an educational booklet and higher amount of PEG powder to raise the quality of colon prep and subsequently optimize the cecal intubation rate and ADR.

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