Original Article

Appropriateness of colonoscopy indication for colorectal neoplasm detection in patients under 50 years old with hematochezia

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ABSTRACT: **Objective**: Evaluate the appropriateness of colonoscopy indication for neoplastic lesion detection in patients under age 50 with hematochezia. **Methods**: Retrospective and cross-sectional study in patients who underwent colonoscopy, from 2002 to 2009. Inclusion criteria included patients with hematochezia over 20 years old. Exclusion criteria were: history of inflammatory bowel disease (IBD), polypectomy, family history of colorectal cancer (CRC), fecal occult blood (FOB), anemia, weight loss and personal history of cancer. Neoplastic lesions were stratified into proximal or distal to splenic flexure. **Results**: 683 patients met the inclusion criteria in 5,000 colonoscopies registered. Median age was 49.46 years old (20 to 94 years old) and 486 patients (71.2%) were females. No proximal colon cancer was detected in the proximal group under 50 years old. Proximal advanced adenomas were diagnosed in one (0.9%) patient in the group of 30 to 40 years old (n=113) *versus* 7 (3.75%) in the group of 40 to 50 years old (n=187), with p=0.268. **Conclusions**: Malignant neoplastic lesions and advanced adenomas are uncommon and predominantly distal in the population between 30 and 50 years old, with hematochezia without risk factors for colorectal cancer (CRC). Therefore, flexible sigmoidoscopy appears to be sufficient as the initial method for evaluating these patients.

Keywords: colonoscopy; colorectal neoplasms; adults; gastrointestinal hemorrhage.

RESUMO: **Objetivo**: Avaliar a propriedade da indicação da colonoscopia para pesquisa de lesões neoplásicas em pacientes com menos de 50 anos com hematoquezia. **Métodos**: Estudo retrospectivo e transversal, realizado em pacientes submetidos à colonoscopia, de 2002 a 2009. Foram incluídos pacientes com hematoquezia com idade igual ou superior a 20 anos. Os critérios de exclusão foram: história de doença inflamatória intestinal, polipectomia, história familial de câncer colorretal, sangue oculto nas fezes, anemia, emagrecimento e história pessoal de neoplasia. Lesões neoplásicas foram estratificadas em proximais ou distais ao ângulo esplênico. **Resultados**: Obedeceram aos critérios de inclusão 683 pacientes dentro de 5.000 colonoscopias registradas. A média de idade foi 49,46 anos (20 a 94 anos) e 486 pacien-

Study carried out at the Service of Coloproctology, Hospital Universitário Cajuru (SECOHUC) at Pontifícia Universidade Católica do Paraná – Curitiba (PR), Brazil.
The studied patients were from Clínica Lucano (a private Coloproctology clinic in Curitiba).
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tes (71,2%) pertenciam ao gênero feminino. Nenhum câncer do cólon proximal foi detectado no grupo com menos de 50 anos. Adenomas avançados proximais foram diagnosticados em 1 (0,9%) paciente no grupo de 30–40 anos (n=113) *versus* 7 (3,75%), no de 40–50 anos (n= 187), com p=0,268. Conclusões: As lesões neoplásicas malignas e os adenomas avançados são pouco frequentes e predominantemente distais na população entre 30–50 anos, com hematoquezia, sem fatores de risco para o câncer colorretal. A retossigmoidoscopia flexível, portanto, parece ser suficiente como método inicial para a avaliação de tais pacientes.

Palavras-chave: colonoscopia; neoplasias colorretais; adulto; hemorragia gastrointestinal.

INTRODUCTION

Colonoscopy is considered the most effective method for colorectal cancer (CRC) screening in the population over 50 years old with sporadic risk[1]. In addition, it allows to remove adenomas, reducing the incidence of CRC and, consequently, causing a true impact on the natural history of this disease[2,3].

The number of colonoscopies performed worldwide has increased progressively. Inadequate indications and abusive uses of this procedure are some of the reasons for increasing and unachievable demand at the public health centers[4]. The exam is safe, but it can involve complications such as: intestinal perforation, hemorrhage and cardiopulmonary alterations in terms of sedation, which may lead to death in case of late diagnosis[5]. The correct indication, based on well defined clinical criteria, is essential for a proper cost-benefit ratio and minimized complications.

The guidelines of the *American Society for Gastrointestinal Endoscopy* (ASGE), issued in 2000, and of the *European Panel on the Appropriateness of Gastrointestinal Endoscopy II* (EPAGE II) indicate the CRC screening, preferably through colonoscopy, to asymptomatic patients without family history of CRC over age 50, each ten years[6,7].

In symptomatic patients, hematochezia is the frequent indication for this exam. It is considered an important sign of anorectal and colonic disease. Physicians and patients should take it as a warning of the risk for CRC, as up to 25% of the patients present such diagnosis[8].

Talley and Jones, while studying a specific population, described up to 20% of individuals with that diagnosis in the period of 12 months. This complaint seemed to be more common in patients under 50 years old. Less than half of these patients searched for medical support and, when they did it, it was usually for other gastrointestinal complaints[9].

Hematochezia, before or after defecation, is more suggestive of distal colorectal lesions. Bright red bleeding on the paper or underwear clothing is more related to anorectal diseases, such as fissures and hemorrhoids. Blood in stool should be taken by physicians as a warning of more proximal lesions to colon, such as diverticular diseases, inflammatory diseases and CRC.

The practice remains indefinite in the literature for patients with hematochezia under 50 years of age and without other risk factors for CRC.

The EPAGE II and the ASGE make a specific reference to patients under 40 years old with hematochezia. For this group, when the proctologic exam and flexible rectosigmoidoscopy show evidences that the case is benign and distal, there is no indication of colonoscopy[7,10].

In France, the *Agence Nationale d'Accréditation et d'Evaluation en Santé* (ANAES) does not recommend colonoscopy to patients under 50 years old who complain of isolated hematochezia, prescribing flexible rectosigmoidoscopy instead. Colonoscopy is indicated when bleeding is chronic, associated with several episodes, regardless of the age[11].

The first publications on colonoscopic findings in patients with hematochezia were retrospective. They concluded that colonoscopy would be adequate in this group of patients due to the high rate of significant lesions[12-14].

Acosta et al. published the first study that evaluated the colonoscopic findings in young adults with hematochezia. They found 21% of the findings were significant and concluded that colonoscopy would be justifiable in patients under 40 years of age[15].

Lewis, Shih and Blecke analyzed, in a retrospective study, 570 patients with hematochezia under 50 years of age. The authors concluded that the patients above 40 years old with hematochezia required an investigation with colonoscopy, due to the considerable number of neoplastic lesions. However, in patients under 40 years of age, the number of advanced neoplastic

lesions was low. Then, the indication of colonoscopy to this age group should be on a case-by-case basis[16].

The habitual use of colonoscopy as an initial investigation of hematochezia in young adults has been questioned by several authors.

Mulcahy et al., in a retrospective series of studies that analyzed 1,766 patients with hematochezia, also questioned the role of colonoscopy for the same indication. No proximal CRC was detected in this series. Then, they concluded that flexible rectosigmoidoscopy would be sufficient as the initial method[17].

Eckardt et al., in a prospective control-case study, evaluated the prevalence of neoplastic lesions in the group with hematochezia without risk factors for CRC. Hematochezia presented OR=1.2 for proximal lesions, with flexible rectosigmoidoscopy sufficient as the initial method. The patients with positive fecal occult blood (FOB) test or bleeding with clots would have to be submitted to colonoscopy, as these groups presented increased risk for proximal neoplastic lesions[18].

Carlo et al., in a prospective study, analyzed 417 patients with hematochezia, without risk factors for CRC. The patients were sorted into two groups: over and under 45 years old. No proximal neoplastic lesion was detected in the second group. They concluded that flexible rectosigmoidoscopy could be used as the initial method for patients with hematochezia in this group[19].

Spinzi et al., in multicenter prospective study, analyzed 622 patients between 30 and 50 years old with hematochezia. No proximal CRC was detected and less than 1% of advanced proximal adenoma was observed in the group of 40–50 years old. The authors suggest that flexible rectosigmoidoscopy is sufficient as the initial method of investigation in patients with hematochezia under 40 years old, and that colonoscopy should not be habitual for patients in the group of 40–50 years old[20].

In 1991, Church evaluated, in a prospective study, patients with hematochezia, positive FOB test, bleeding in stool and lower gastrointestinal bleeding. Only one adenoma proximal to splenic flexure was found in the patients with hematochezia[21]. Then, he concluded that flexible rectosigmoidoscopy would be sufficient in patients with hematochezia during or after defecation. In 2008, Eric Mardestein and James Church came to the same conclusion in a prospective study that analyzed 703 patients[22].

Based on these facts, there is no absolute agreement between the guidelines for the initial evaluation of patients under 50 years of age, with hematochezia. The purpose of this study was to analyze the appropriateness of colonoscopy indication for young adults with hematochezia, without risk factors for CRC.

OBJECTIVES

The primary purpose was to analyze the appropriateness of colonoscopy for neoplastic lesion detection in patients under 50 years old with hematochezia. The secondary objectives included: describe epidemiological data; analyze the frequency of the indication of colonoscopy for hematochezia; describe the significant findings of colonoscopy exams performed in this population and analyze the prevalence and anatomical distribution of colorectal neoplasms in patients under 50 years old with hematochezia.

METHODS

The research project of this study was approved by the Research Ethics Committee of the Pontifícia Universidade Católica do Paraná (PUCPR), under number 0004024/10.

That was a retrospective, cross-sectional and observational study conducted by the Service of Coloproctology of the Hospital Universitário Cajuru (SECOHUC).

The studied population included patients submitted to colonoscopy at Clínica Lucano (a private service of Coloproctology and Digestive Endoscopy), in Curitiba, between January 2002 and December 2009.

The database information was taken from the clinical records, colonoscopy reports and anatomopathological exams. Data collection was performed by three investigators (two resident physicians and one coloproctologist), according to the study instrument.

The inclusion criteria were: patients over 20 years old, complaining of hematochezia. The exclusion criteria were: clinical reports or records with insufficient data; patients under 20 years old; history of inflammatory bowel disease (IBD); previous polypectomy; family history of CRC; fecal occult blood (FOB); anemia; weight loss; personal history of malignant neoplasm and incomplete endoscopic exams.

The database was created using SPSS®, version 16.0 (IBM Corporation, 2010).

The exams were performed by three experienced endoscopists. For this study, the minimum experience

was more than 1,000 colonoscopy exams and more than 200 colonoscopy exams per year.

Between 2002 and 2006, the exams were performed using a video colonoscope (Fujinon 2200). As of 2006, the device used in the exam was a Fujinon video colonoscope, model 4400 EC-590ZW/L, with magnification and chromoscopy.

The most frequently used solution was 1,000 mL of mannitol at 10%, combined or not with sodium picosulfate. The patients were submitted to endovenous sedation using propofol, assisted by a anesthesiologist.

The patients were from the clinic and other external offices, and they came specifically to be submitted to colonoscopy.

Definitions

The study considered an advanced adenoma lesions that fulfilled one or more of these criteria: diameter of min. 1 cm; more than 25% of the area with villous component or with high-grade dysplasia (HGD)[23].

Neoplastic lesions include adenomas and CRC. Distal neoplastic lesions were located under the splenic flexure, while the proximal neoplastic lesions were above the splenic flexure.

Significant findings included: IBD, vascular lesions, diverticular disease and neoplastic lesions.

Statistical analysis

Descriptive parametric statistics with frequency tables were used in data evaluation. Mean, median and standard deviation were calculated using SPSS®, version 16.0 (IBM Corporation, SPSS Inc., Chicago IL, USA).

The hypotheses were tested using the χ^2 test, with evaluation of independent variables. Fisher's exact test was used in variables with n<5. The level of significance (α) was 5%.

RESULTS

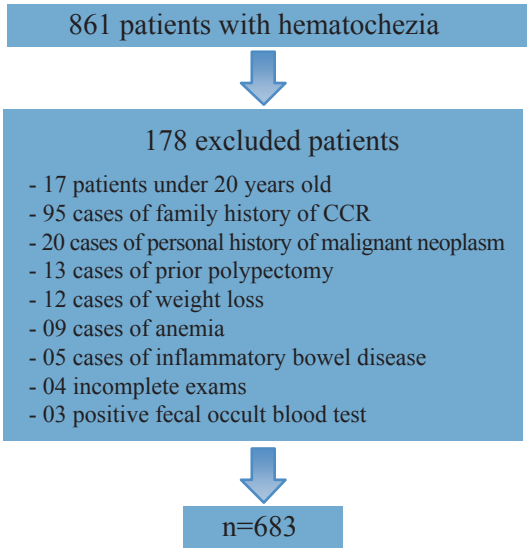
During the period mentioned above, data were collected from 5,000 colonoscopy exams performed in 3,687 patients. In 4,249 colonoscopy exams, the reason for indication was characterized. Hematochezia was the second most frequent indication, with 861 (20.3%) individuals. Table 1 shows the reason for indicating colonoscopy.

The flowchart in Figure 1 illustrates the sample that followed the inclusion and exclusion criteria. The

Table 1. *Indications of colonoscopy.*

Indications	n=4,249	%
Screening	1,223	28.8
Hematochezia	861	20.3
Polypectomy follow-up	741	17.4
Family history of CRC	714	16.8
Abdominal pain	439	10.3
Diarrhea	355	8.4
Change in intestinal habit	290	6.8
IBD*	261	6.1
CRC follow-up	207	4.9
Positive FOB** test	77	1.8
Personal history of malignant neoplasm	85	1.7
Anemia	45	1.1
Weight loss	41	1.0
Familial adenomatous polyposis	26	0.6

*Source: Clínica Lucano, Curitiba, Paraná. *IBD: inflammatory bowel disease; **FOB: fecal occult blood (CRC). Note: the study had patients with more than one indication of colonoscopy.*



Source: Clínica Lucano.
Figure 1. *Flowchart for sample selection.*

total sample included 683 patients – 197 males and 486 females (Table 2).

Mean age was 49.46 years (SD±15.51 years). The minimum age was 20 years and the maximum age was 92. The frequency distribution of patients by closed interval of age class is described in Chart 1.

In this study, there was no association of hematochezia complaint with age group among the patients over or under 50 years old (Table 3).

Table 4 describes the frequency of significant findings in patients distributed by age group. Neoplastic lesions, diverticular disease of colon, vascular alteration and CRC were more prevalent in patients over 50 years old with statistical significance ($p<0.05$). IBD was more frequent in the group of patients under 50 years old ($p<0.05$).

In total, 304 polypectomy exams were performed in the 184 (26.9%) patients with polyps. Sixteen polyps were lost in the light. Two patients presented leiomyoma and were not included in the analysis. From the 286 polyps, 178 were benign neoplasm (Table 5); 79 advanced adenomas were found in 73 (10.68%) patients.

In the group of 30–40 years old, five advanced adenomas were detected in three (2.65%) patients. Only one (0.9%) of them was proximal, tubular, without HGD, of 10 mm diameter and located in the ascending colon.

In the group of 40–50 years old, 14 advanced adenomas were detected in 13 patients (6.95%). Seven patients (3.75%) had proximal adenomas. Five of these seven patients with proximal adenomas were over 45 years old. Four tubular adenomas presented HGD and one adenoma was classified as serrated, with diameter over 10 mm. The two advanced adenomas found in

Table 2. *Distribution of patients with hematochezia by gender.*

Gender	n	%
Female	486	71.2
Male	197	28.8
Total	**683**	**100.0**

Source: Clínica Lucano, Curitiba, Paraná.

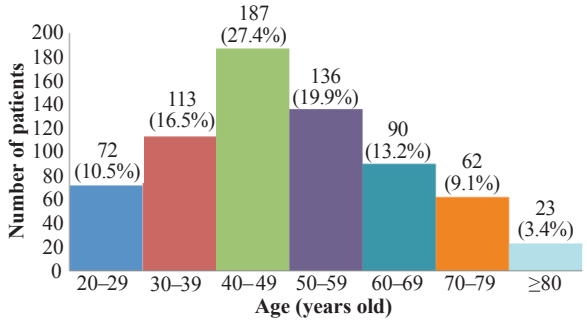


Chart 1. *Histogram with the frequencies of patients with hematochezia by interval of age class.*

Table 3. *Distribution of patients with hematochezia by age group.*

Age group	n	%
<50 years old	372	54.5
≥50 years old	311	45.5
Total	**683**	**100.0**

Source: Clínica Lucano, Curitiba, Paraná. $\chi^2=0.81$; $p>0.05$.

Table 4. *Distribution of significant findings according to patients over and under 50 years old with hematochezia.*

Significant findings	<50 years old (n=372)	≥50 years old (n=311)	p-value
Neoplastic lesions	43 (11.6%)	113 (36.3%)	<0.05
Diverticular disease of colon	16 (4.3%)	122 (39.2%)	<0.05
Inflammatory bowel disease	46 (12.4%)	12 (3.9%)	<0.05
Vascular alterations	5 (1.3%)	16 (3.1%)	<0.05
Patients with significant findings*	102 (27.4%)	198 (63.7%)	<0.05

Source: Clínica Lucano, Curitiba, Paraná. The total value is the number of patients with significant findings. The study had patients with more than one significant finding.

patients of 40–45 years old had 10 mm diameter, one was tubular with HGD and one was serrated without HGD (Table 6).

Table 7 shows the classification of malignant colorectal lesions. No malignant lesion was proximally located in patients under 50 years of age.

Table 5. *Distribution of benign neoplastic polyps according to the histological type by age group.*

Histology of polyps	<50 years old (n=372)	≥50 years old (n=311)
Tubular	29	88
Tubulovillous	05	31
Villous	00	02
Serrated	17	06
Total	**51**	**127**

Source: Clínica Lucano, Curitiba, Paraná.

DISCUSSION

International series of studies have described that around 20% of colonoscopy exams are indicated due to hematochezia, which is the second most frequent indication[24,25]. Some Brazilian series of studies show hematochezia as the most frequent indication of colonoscopy[26,27]. In this study, it was the second most frequent indication of colonoscopy.

There is no doubt that hematochezia – of any size – is an indication of colonoscopy for patients over 50 years old. In patients under this age group, the incidence of neoplastic lesions is lower and benign orificial causes are frequent reasons for searching medical attention. For this group, there is no established consensus regarding the indication of colonoscopy to investigate hematochezia in the different groups of medical specialties[7,10]. The assistant physician should decide on how to start the investi-

Table 6. *Distribution of patients with advanced adenomas according to the age group and location.*

Age group (years old)	Advanced adenomas	Proximal	Distal
20–30 (n=72)	2 (2.8%)	0	2 (2.8%)
30–40 (n=113)	3 (2.65%)	1 (0.9%)*	3 (2.65%)
40–50 (n=187)	13 (6.95%)	7 (3.75%)*	6 (3.20%)
50–60 (n=136)	23 (16.9%)	4 (2.9%)	22 (16.2%)
60–70 (n=90)	18 (20%)	7 (7.7%)	11 (12.2%)
70–80 (n=62)	9 (14.5%)	3 (4.83%)	6 (9.7%)
≥80 (n=23)	5 (21.7%)	0	5 (21.7%)

*Source: Clínica Lucano, Curitiba, Paraná. *Fisher's exact test, comparing the frequencies of patients with proximal advanced adenomas, between the patients of 30–40 and 40–50 years old (p=0.266). The study had patients with proximal and distal advanced adenomas.*

Table 7. *Distribution of patients with malignant lesions by age group and location.*

Age group	Malignant colorectal lesions n (%)	Proximal	Distal
20–30 (n=72)	0 (0)	0	0
30–40 (n=113)	4 (3.5)	0	04
40–50 (n=187)	8 (4.7)	0	08
50–60 (n=136)	5 (3.7)	0	05
60–70 (n=90)	12 (13.3)	0	12
70–80 (n=62)	6 (9.7)	0	06
≥80 (n=23)	3 (13)	02	01

Source: Clínica Lucano, Curitiba, Paraná. No proximal malignant colorectal lesion was found in patients under 50 years old.

gation and whether to use flexible rectosigmoidoscopy or colonoscopy.

The fear of not diagnosing potentially healable colorectal neoplastic lesions favors the indication of colonoscopy in this population. However, the costs, risks and discomfort in the preparation for this exam may not be higher than the benefits to patients with hematochezia.

Polyps bleed at low frequency and seem to be randomly identified in the bleeding investigation[28]. For this reason, it may be difficult to establish a direct relation between hematochezia and polyp as a cause.

The use of colonoscopy has increased in the last years, particularly in young adults, while the use of flexible rectosigmoidoscopy has decreased[29].

The literature clearly shows the best initial method to investigate this population. Investigators suggest colonoscopy to patients with hematochezia. However, most of these studied did not analyze the patients in terms of age group[8,12-14,30,31].

From another standpoint, other authors observed that most significant lesions are distally located, especially CRC. They concluded that, in patients between 30 and 39 years old, flexible rectosigmoidoscopy would be sufficient. For the group between 40 and 49 years old, with hematochezia, the patients should be considered on a case-by-case basis, with colonoscopy or flexible rectosigmoidoscopy[17-20,22,32].

Neoplastic lesions, diverticular disease of colon and vascular alterations were most frequent in patients over 50 years old with hematochezia. IBDs were more prevalent in patients under 50 years old. These data were statistically significant and agree with the epidemiology of these disorders.

This study did not classify the type of hematochezia in terms of time to manifestation. Guillem, Forde and Treat did not detect significant differences between the findings and the form of bleeding (acute and chronic)[14]. Fine et al., in a prospective study, used a board of colors to help the patient determine the type of bleeding. They concluded that the color of stool is not a good predictor of disease location and severity[33]. It should be noted that the information about bleeding is more subjective and the patients is not always able to characterize it.

Proximal advanced adenomas were found in a much lower proportion in patients of 30–50 years old. No proximal CRC was detected in patients with hematochezia under 50 years old.

Fine et al., in a prospective study with 58 patients under 40 years old with hematochezia, detected three patients with proximal CRC. They suggested that colonoscopy should be performed with this group. These authors were the only that detected proximal CRC in this type of population[33].

Wong et al. detected adenoma and CRC in 11.6% of the 223 patients under 40 years old with hematochezia. Twenty-six (9.9%) patients had adenomas, 6 of them were proximally located. Four (1.8%) had CRC, all distally located[34]. These results are similar to those found in this study. The authors concluded that colonoscopy should be performed in patients under 50 years old with hematochezia. This conclusion can be considered controversial, as malignant lesions were distal and most benign polyps were also distal.

Van Rosendaal et al. found a malignant lesion proximal to splenic flexure in a 44-year-old patient, among total 61 patients analyzed by hematochezia, under 55 years of age. These authors concluded that, in young patients with hematochezia, the investigation can be started using flexible rectosigmoidoscopy[35]. Nikpour and Ali Asgari came to the same conclusion in a series of studies that analyzed 402 patients[32].

David Lieberman concluded, in a literature review until 2002, that patients with hematochezia during or after evacuation, without family history of CRC, would be properly evaluated by flexible rectosigmoidoscopy. From 40 to 49 years of age, each case would be individually considered, with the option to use either rectosigmoidoscopy or colonoscopy[36].

Carlo et al., in a prospective study that analyzed 417 patients with hematochezia without risk factors for CRC, evaluated the colonoscopic findings of this population. They grouped the patients into two groups: over and under 45 years old. They detected two (1.1%) polyps over 10 mm, 29 (16.1%) patients with IBD and no CRC in the younger group. No proximal neoplastic lesion was found. They concluded that flexible rectosigmoidoscopy can be used as the initial method for patients with hematochezia under 45 years old, without risk factors for CRC[19].

Spinzi et al., in a multicenter prospective study conducted in Italy, analyzed 622 patients between 30 and 50 years old, with hematochezia, using similar exclusion criteria to those considered in this study. The incidence of CRC was 0.6% in both groups of 30–39 and 40–49 years old. Seven (2.2%) patients of 30–39 years old presented advanced adenomas, all distally located. In patients of 40–49 years old, 11 (3.5%) patients presented advanced adenomas, only 3 (0.96%) with proximal adenomas. They concluded that flexible rectosigmoidoscopy would be sufficient in patients under 40 years old with hematochezia. In patients between 41 and 50 years of age with hematochezia, the probability of finding proximal adenomas is rare, as colonoscopy should not be habitually used in this group[20].

The last study in evidence was the investigation conducted James Church, in 1991[21]. In the first study, Church, in a prospective analysis, described 115 patients with hematochezia without risk factors for CRC and who had been submitted to colonoscopy. He observed a proximal adenoma proximal and no CRC.

In 2008, Marderstein and Church published a similar prospective study that analyzed 703 patients submitted to colonoscopy with bright bleeding after or during evacuation. Among the 183 patients under 50 years old, only 3 (1.6%) had advanced adenoma and no patient presented CRC. They concluded that colonoscopy would be unnecessary in this group[22].

Studies that analyzed autopsies detected 0.03% of proximal adenoma or CRC in patients between 30 and 39 years old[37]. Nelson et al. estimated that the risk of CRC in patients under 40 years old is 0.06%. On the other hand, the risk of serious complications in colonoscopies can reach 0.3%[38].

Flexible rectosigmoidoscopy is less costly when compared to colonoscopy and is usually not performed under sedation. Although undesirable side effects are known related to anesthesia drugs used in endoscopy, more recent studies do not show serious complications involving significant clinical impacts[39]. Not using, or using, anesthesia would be more related to socioeconomic than to medical aspects.

Around 30% of flexible rectosigmoidoscopy exams should be complemented with colonoscopy, especially due to distal adenomas. Lyra Jr. et al., when analyzing 74 patients showing rectal adenomas in rigid rectosigmoidoscopy, found proximal neoplasm in 42.5% of the patients[40]. These patients will be submitted to two procedures, which could cause inconveniences.

The ability to reach the splenic flexure is variable. Studies show success rats up to 84.8%[41]. Then, not all exams will be complete.

This theme is polemical and involves causes affliction to both physician and patient when the method has to be selected. The medical resources are limited in developing countries like Brazil. Colonoscopy is not available to all patients served by the Unified Health System (SUS – the public health facilities in Brazil). The indiscriminate indication of colonoscopy increases lines of patients waiting for the service at public health facilities. Then, the rationalization of colonoscopy indication to young adults with hematochezia, without risk factors for CRC, would prevent the indiscriminate access to lines for this exam. Consequently, exams of higher priority would be performed more rapidly.

For patients with risk factors for CRC with hematochezia, regardless of their age, colonoscopy remains as the most effective method of diagnosis.

Despite the limitations of this study – prospective analysis and considering a population from a specialized clinic –, it agrees with previously published results.

It should be noted that the recommendation of the most adequate diagnostic method should be based on studies with proper methodology. The findings of this study should be interpreted within the context of its limitations and can guide the indication of colonoscopy more rationally, in the population of young adults, with hematochezia and without risk factors for CRC.

CONCLUSIONS

The rationalization of colonoscopy indication is required, considering the increasing demand for this exam, especially at public health services. Hematochezia was the second most frequent indication of colonoscopy. The frequency of significant findings was higher in the group of patients over 50 years old, except for IBD, which was more frequent in the younger group.

In patients under 50 years old, with hematochezia, without risk factor for CRC, the prevalence of advanced adenomas and proximal CRC to the splenic flexure was very low.

No malignant neoplasm was proximally located in patients under 50 years of age. No statistical significance was observed in findings from proximal advanced adenomas when comparing the patients of 30–40 and 40–50 years old.

Flexible rectosigmoidoscopy seems to be a sufficient initial diagnostic method to evaluate neoplastic lesions in this group of patients.

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