



Original Article

# Colonoscopic findings in patients younger than 40 years



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## ABSTRACT

**Objective:** To analyze the main endoscopic findings in patients under 40 years of age and the main indications for colonoscopy in these patients.

**Methods:** A retrospective study with 362 reports of patients under 40 years of age who underwent colonoscopy from January 2014 to June 2017 at the colonoscopy service of the General Hospital Roberto Santos. Colon preparation was performed with mannitol and the patients underwent sedation as the anesthetist criteria.

**Results:** Of the 362 patients analyzed, 192 (53%) were female. The mean age was 25 years (25.58 ± 11.95). The most frequent indications were inflammatory bowel disease in 24.3% (88) of the patients, bleeding in the lower digestive tract in 24% (87), and chronic diarrhea in 20.2% (73). The main colonoscopic findings were polyposis in 21.3% (77) of the patients and inflammatory alterations in 20.7% (75).

**Conclusion:** With the analysis of the data provided by the colonoscopies, it was possible to conclude that, when the investigation is adequate and the examination is well indicated, even under the age of 40, colonoscopy can help in the diagnostic and treatment of several pathologies, including those that may increase the risk of colorectal cancer.

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## Colonoscopy findings in patients under 40 years of age

### R E S U M O

#### Palavras-chave:

Colonoscopia  
Diagnóstico endoscópico  
Doenças do cólon  
Polipose  
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**Objetivo:** Analisar os principais achados endoscópicos nos pacientes com idade inferior a 40 anos e as principais indicações para realização das colonoscopias.

**Métodos:** Estudo retrospectivo, com análise de 362 laudos de pacientes com idade inferior a 40 anos submetidos à colonoscopia, no período de Janeiro de 2014 até Junho de 2017 no serviço de coloproctologia do Hospital Geral Roberto Santos. Foi realizado preparo de cólon com manitol e os pacientes foram submetidos à sedação á critério do anestesista.

**Resultados:** Dos 362 pacientes analisados, 192 (53%) eram do sexo feminino. Em relação à idade: média de 25 anos ( $25,58 \pm 11,95$ ). As indicações mais frequentes foram doença inflamatória intestinal em 24,3% (88) dos pacientes, sangramento digestivo baixo em 24% (87); e diarreia crônica 20,2% (73). Os principais achados colonoscópicos foram polipose em 21,3 (77) dos pacientes e alterações inflamatórias em 20,7% (75).

**Conclusão:** Com análise dos dados fornecidos pelos exames colonoscópicos e suas indicações foi possível concluir que quando a investigação é adequada e o exame é bem indicado, mesmo abaixo dos 40 anos, a colonoscopia pode auxiliar no diagnóstico e tratamento de diversas patologias, inclusive as que podem aumentar o risco de câncer colorretal.

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## Introduction

Colonoscopy is an important exam for the investigation of several pathologies in coloproctology. It is useful to assess abnormalities observed in other imaging tests and in the evaluation of digestive bleeding. It is also indicated in inflammatory bowel disease, in the tracking and follow-up of colon cancer and in chronic diarrhea of undetermined origin. It has a therapeutic character, as it is used for intestinal polyp removal, stenosis dilatation, treatment of low digestive hemorrhage, and colic decompression in some cases of intestinal obstruction.<sup>1</sup>

Complete visualization of the large intestinal mucosa through colonoscopy is known to be of great importance for the correct diagnosis of most colorectal diseases. Currently, it stands out as one of the most complete disease investigation methods diseases in coloproctology.<sup>2</sup>

One of the main indications of this procedure is inflammatory bowel disease (IBD). The two main forms of presentation are Crohn's disease (CD) and non-specific ulcerative colitis (NSUC).<sup>3</sup>

Another important indication for colonoscopy is low digestive bleeding, which presents a broad clinical spectrum, ranging from recurrent and non-expressive hematochezia episodes to massive hemorrhage and hemodynamic shock. In the vast majority of cases, bleeding is self-limited.<sup>4</sup>

Regarding colorectal cancer (CRC) screening, colonoscopy is believed to be the most sensitive method. According to the Brazilian Society of Coloproctology, screening for individuals who do not present symptoms, do not have inflammatory disease, or do not have a family history should begin at age 50 years, through fecal occult blood tests (annual) and annual or bi-annual rectosigmoidoscopy.<sup>5</sup> Colonoscopy can also be

included in the initial screening, and should be repeated every 10 years.<sup>6</sup>

Earlier screening is indicated in those with bowel symptoms such as digestive bleeding, altered bowel rhythm (alternating diarrhea and constipation), abdominal distension, abdominal or anal pain or discomfort, weakness, anemia, and weight loss with no apparent cause. In individuals with a personal or family history of bowel, ovarian, endometrial, breast, or thyroid cancer, colonoscopic screening should begin at age 40 (or 10 years before the age at diagnosis of the family member with the earliest-detected illness). Moreover, those with a history of IBD (NSUC or CD) should begin screening for CRC upon completing seven to ten years of disease diagnosis.<sup>5</sup> The use of colonoscopy for CRC screening in patients younger than 40 years is not yet well established.

In fact, there is a shortage of information on colonoscopic data in this age group, regardless of the indication, which stimulated this study on the colonoscopic findings of patients under the age of 40 years from a reference center in Salvador, Bahia.

## Objective

To analyze the main endoscopic findings in patients aged under 40 years and the main indications for colonoscopy.

## Methods

This case series study assessed the reports of patients who underwent colonoscopy from January 2014 to June 2017.

The study was performed at the Hospital Geral Roberto Santos (HGRS). The study sample consisted of all patients younger than 40 years who underwent colonoscopy at the

Coloproctology service of the HGRS between January 2014 and June 2017. Those with incomplete reports in the variables age and/or patient origin, which totaled 19 reports, were excluded from the study.

The colon is prepared with 750 mL of 10% mannitol, administered orally at doses of 100 mL within 2–3 h prior to the test, which is performed in the unit. Patients were instructed to not eat a residue meal the night before the examination. Patients underwent sedation at the discretion of the anesthesiologist.

The assessed variables were: age, sex, indication of the exam, finding of the exam, origin, and exam conditions. The indications for the procedure were collected from the colonoscopy request reports. Each colonoscopy report presents one or more indications for the procedure, which are generally the most relevant ones at the time the exam was requested. The exam conditions were classified as regular, good, or poor. The origin was classified as external (patient from another service) and internal (a patient of this hospital, whether from the ward or emergency room). The colonoscopic examination was considered complete when it reached the cecum or terminal ileum.

SPSS version 21 was used for data analysis.

This study was approved by the Research Ethics Committee. The authors declare to have no conflicts of interest in this study.

## Results

Of the 362 patients analyzed, 192 (53%) were female and 170 (47%) were male. Regarding age, the youngest patient was 11 months, while the oldest 39 years; the mean age was 25 years ( $25.58 \pm 11.95$ ). The exam was most commonly performed in the age group from 30 to 39 years (50% of patients,  $n=181$ ). The tests were performed under good intestinal preparation conditions in 90.9% ( $n=329$ ); in 7.5% ( $n=27$ ), under regular conditions; and in 1.65% ( $n=6$ ), under poor conditions. The colonoscopy was performed up to the cecum/terminal ileum in 90.3% ( $n=327$ ) of the patients. Most of the patients who underwent colonoscopy at the unit were classified as being from an external origin (82.6%,  $n=299$ ); the remaining were from the hospital, whether from the ward or the emergency room.

The most frequent indications for colonoscopy were IBD (including CD and ulcerative colitis) in 24.3% ( $n=88$ ) of the patients, low digestive bleeding in 24% ( $n=87$ ), and chronic diarrhea in 20.2% ( $n=73$ ). [Table 1](#) describes the other indications for colonoscopy.

Some of the indications not mentioned in the table include: prolapse, cervical mass, hepatic nodules, congenital megacolon, anal pain, abdominal distension, and ulcers. Some patients presented more than one indication for the exam, and all were included in the study.

The main colonoscopic findings were polyposis in 21.3% ( $n=77$ ) of the patients and inflammatory alterations in 20.7% ( $n=75$ ). The most predominant inflammatory alteration was ulcerative colitis (60%;  $n=45$ ); other alterations are described in [Table 2](#). Some patients presented more than one inflammatory alteration in the colonoscopy. Polyps were most commonly found in the rectum (32.4%;  $n=25$ ); other locations

**Table 1 – Indications for colonoscopies in patients younger than 40 years.**

Indication	n	%
Abdominal pain	33	9.1
Polyposis	26	7.2
Obstipation	16	4.4
Weight loss	14	3.9
Reconstruction of intestinal transit	12	3.3
Neoplasia screening/history	10	2.8
Endometriosis	6	1.7
Fistule	5	1.4
Neoplasia	2	0.6
Other	57	15.7

**Table 2 – Description of colonoscopy findings of inflammatory alterations (n = 75).**

Inflammatory alterations	n	%
Crohn's disease	22	29.3
Non specific	16	21.3
Pancolitis	5	6.6
Rectitis	4	5.3
Non-specific ileitis	4	5.3
Proctitis	2	2.7
Colitis	1	1.3
Proctosigmoiditis	1	1.3

**Table 3 – Location of polyps found in colonoscopies (n = 77).**

Location	n	%
Sigmoid colon	23	29.9
Transverse colon	15	19.5
Descending colon	12	15.6
Ascending colon	12	15.6
Cecum	10	13.0
Universal in colon	3	4.0
Anal canal	2	2.6
Hepatic angle	1	1.3
Splenic angle	1	1.3

are described in [Table 3](#). Some patients presented polyps at various locations in the colon. A total of 70 patients underwent polypectomy.

In a 27-year-old male patient, a neoplasm was found in the hepatic angle; colonoscopy had been indicated due to abdominal distension. A total of 29.3% ( $n=106$ ) of the reports were considered normal. [Table 4](#) describes the other colonoscopic findings.

Other findings not described in the Table include diverticulosis, portal hypertensive colopathy, angiectasia, and endometriosis. Some patients had more than one finding in the colonoscopy.

Among the procedures, biopsy was performed in 193 (53.3%) patients; hemostatic clip use in four (1.1%); mucoscopy, in two (0.55%); and argon plasma use, adrenaline solution use, saline solution use, and dilation were necessary in one (0.3%) patient each.

In the analysis of patients with normal colonoscopic findings ( $n=106$ ), the main indications for the exam were diarrhea in 28.3% ( $n=30$ ), intestinal bleeding in 18.8% ( $n=21$ ), IBD in 12% ( $n=13$ ), abdominal pain in 12% ( $n=13$ ), constipation in

**Table 4 – Colonoscopy findings in patients younger than 40 years.**

Findings	n	%
Lymphoid nodular hyperplasia (LNH)	42	11.6
Hemorrhoidal disease	28	7.7
Erosion/laceration/ulcer	28	7.7
High injury	13	3.6
Diverticular disease	9	2.5
Colitis/proctite/rectal colitis/rectitis due to disuse	8	2.2
Stenosis/substenosis	7	1.9
Colectomy/retinosigmoidectomy/hemicolectomy	7	1.9
Other findings	44	12.1

8% (n=9), screening in 5% (n=6), weight loss in 4% (n=5), and polyposis in 2% (n=3).

In patients with polyp findings (n=77), the main indications were bleeding in 33.8% (n=26), polyposis in 23.3% (n=18), IBD in 14.2% (n=11), diarrhea in 13% (n=10), abdominal pain in 6% (n=5), constipation in 5.2% (n=4), screening in 5.2% (n=4), and weight loss in 4% (n=3). In patients with inflammatory alterations (n=75), the main indications were IBD in 65.3% (n=49), diarrhea in 20% (n=15), intestinal bleeding in 8% (n=6), weight loss in 4% (n=3), and abdominal pain in 2% (n=2).

Lymphoid nodular hyperplasia (LNH; n=42) was more prevalent in the 0–10 age group (57%; n=24); 31% of the cases (n=13) were observed in the age group between 11 and 20 years and 12% (n=5), in the age group between 21 and 39 years.

## Discussion

The first complete colonoscopy successfully performed using fiber optics was reported in 1966 by Overholt and Pollard.<sup>7</sup> The examination has been improving since then. It is now recognized as the main exam for colon assessment; it is more sensitive than radiological methods and allows several therapeutic procedures to be performed.<sup>2</sup>

In the present study, 362 colonoscopy reports were analyzed, providing a considerable body of information.

A female prevalence of 53% was observed in the present study, in line with the 59% rate found by Brenner et al.,<sup>8</sup> who analyzed colonoscopies in patients younger than 20 years. In studies that did not separate patients by age group, some indicated a higher prevalence of females,<sup>9</sup> 67%, and some a higher prevalence of males, 58.43%.<sup>10</sup>

The vast majority of the patients were classified as external, as this unit is a reference center in every state of Bahia. Patients were referred from other institutions and from several cities in the countryside to the Digestive Hemorrhage Center of this hospital.

The main indications for colonoscopy in this study were IBD, in 24.3%; low digestive bleeding, in 24%; and chronic diarrhea, in 20.2%. In the study by Brenner, which included younger patients (albeit in a different age range than the present study), colonoscopy was indicated for most patients due to digestive bleeding and suspected IBD.<sup>6</sup> Other larger studies that included all age groups presented indications such as altered intestinal habit (which includes diarrhea) and low digestive hemorrhage,<sup>2,9</sup> in addition to cancer follow-up, synchronous tumor screening, and CRC screening.<sup>10</sup>

As the present study's population was younger, colonoscopy indications have mostly for pathologies associated with lower age, such as IBD, for which the most affected age group is young adults from 20 to 40 years. In this study, another important indication for colonoscopy was chronic diarrhea, in 20.2%; it may also be associated with IBD, since it is an important characteristic of the clinical picture of this pathology.<sup>3</sup>

Another prevalent indication was that of intestinal bleeding (24%), which may be associated with several pathologies such as diverticular disease, IBD, polyposis, malignancy, and hemorrhoids.<sup>11,12</sup>

In the present study, colonoscopy was indicated due to neoplasia and cancer screening in 0.6% and 2.8% of the patients, respectively, which could be explained by the fact that the assessed age group is not among the most commonly affected by these indications, which usually occur from the age of 50 years onwards.<sup>5</sup>

The main findings of the colonoscopies were polyposis in 21.3% and inflammatory alterations in 20.7%. In studies that did not stratify for age group, the main findings were polyps and diverticular disease.<sup>2,9</sup>

The finding of polyposis is of great importance in colonoscopy, given its close relationship with CRC onset. The protective effect of polypectomies performed during colonoscopic procedures was demonstrated in the National Polyp Study, which suggests a reduction of up to 90% in the incidence of CRC.<sup>13</sup> According to Newcomb et al., in individuals with a positive family history of colorectal neoplasias, 30% to 40% of cancers develop in the right colon. These data show the importance of a complete colonoscopy up to the cecum; in the present study, this was possible for 90.3% of the patients.<sup>14</sup>

In the study by Petroianu, which included patients who underwent colonoscopy for CRC screening without symptoms, polyps were observed in 38.3% (n=59). They were primarily located in the ascending colon, transverse colon, and rectum; in the latter, a higher incidence of multiple polyps was observed.<sup>15</sup> This data was very similar to the present findings, where polyps were more commonly observed in the rectum, sigmoid colon, and transverse colon.

In the study by Petroianu, pre-malignant lesions were observed in one-quarter of the patients, demonstrating that the removal of these lesions endoscopically prevents cancer and all its consequences, which can sometimes be fatal,<sup>15</sup> and thus reinforcing the importance of polypectomy, a procedure performed in 70 of the patients in the present study.

In cases of a polyposis finding, the main indication for colonoscopy was the complaint of intestinal bleeding; this is in agreement with the clinical picture of this pathology, which in the great majority of cases is asymptomatic, but when symptomatic is manifested by the presence of enterorrhagia.<sup>1</sup>

A lesion characteristic of hepatic angioplasty was found in a male patient, age 27 years, who underwent colonoscopy for the assessment of an abdominal distension. Albeit a rare event, a neoplasia finding in such young patients raises questions regarding the appearance of lesions at an earlier age in the population. In the United States, among those aged 45–49 years, the annual incidence of CRC is 24 cases per

100,000 inhabitants, while between the ages 50 and 54 years, this incidence reaches 48 per 100,000 inhabitants. Approximately 7–30% of CRC cases occur in individuals aged under 50 years, many of whom have no apparent risk factor for the disease.<sup>16</sup> This information raises even more questions about the incidence of CRC in patients at lower age groups than those currently considered for screening.

In the present study, the most prevalent finding was inflammatory alterations; this is congruent with the fact that the main indications were IBD assessment, diarrhea, and bleeding, which are part of the clinical picture of this pathology. Moreover, IBD, which is the main pathology of the finding of inflammatory changes, is common in the younger age group assessed in this study.<sup>3</sup>

The sum of the findings of the patients with polyps and inflammatory alterations reached about 40%; both of which may be a risk factor for the development of neoplasia.<sup>17</sup>

LNH is a pathology that affects mostly children, being rarely described in adults. Some authors consider it to be due to a physiological process, but for the majority it is due to a non-specific exogenous stimulus, such as viral infection, food allergy, immunodeficiency, and giardiasis. In the present study, it was observed in the youngest age groups, in agreement with the literature, which indicates that 57% of the patients are between 0 and 10 years of age and 31% between 11 and 20 years.<sup>18</sup>

Despite being an important pathology for the cause of intestinal bleeding, diverticular disease accounted for only 2.5% of the findings in this study, probably because it is a pathology that affects older individuals, that is, those over the age of 40 years.<sup>4</sup>

In the present study, 29.3% ( $n = 106$ ) of the exams were considered to be normal; this value represents less than one-third of the assessed sample.

It is important to emphasize the therapeutic characteristic of colonoscopy, allowing procedures such as a biopsy, hemostatic clip implantation, mucosectomy, argon plasma, adrenaline solution use, and dilation, all of which were performed in the present patients.

In the present study, one of the colonoscopic findings was hemorrhoidal disease. The diagnosis of hemorrhoidal disease is clinical, through a thorough proctological examination, and a colonoscopy is not necessary, except for a differential diagnosis of LGB.

As this is a coloproctology service with a residence program, the reports describe hemorrhoidal disease only as an occasional colonoscopy finding, and this conclusion is considered normal; nonetheless, the present study it was considered as a finding.<sup>19,20</sup>

A limitation of the present study was the lack of access to the results of the anatomopathological examinations in the patients who underwent biopsies. These tests were necessary to confirm the neoplasia, to establish the malignancy of the polyps, and to confirm of the pathological diagnosis of IBD. Therefore, the conclusions were drawn only from observation of the endoscopic examination.

## Conclusion

Colonoscopy is an important exam for diagnosing and treating several pathologies in coloproctology, which increases adherence to this procedure.

Analyzing the data from colonoscopies performed in patients under 40 years of age, it was possible to conclude that, when the investigation is adequate and the exam is well indicated, colonoscopy can help in the diagnosis and treatment of several pathologies, including those that may increase the risk of CRC, such as IBD and polyposis, or the finding of CRC itself.

Although for the vast majority of the population CRC screening is indicated after 50 years of age, neoplasia or pre-neoplastic lesions were observed in younger patients. Larger studies may more adequately assess the need for alteration of the screening age for CRC.

## Conflicts of interest

The authors declare no conflicts of interest.

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