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Original Article

Is prevalence of colorectal polyps higher in patients with family history of colorectal cancer?



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ABSTRACT

Objectives: To assess the prevalence of polyps in patients with a family history of colorectal cancer, in comparison to asymptomatic individuals with indication for screening.

Methods: A prospective study in a group of patients who underwent colonoscopy between 2012 and 2014. Patients were divided into two groups: Group I: no family history of colorectal cancer, and Group II: with a family history in first-degree relatives. Demographic characteristics, findings on colonoscopy, presence, location and histological type of polyps were evaluated, comparing the two groups.

Results: 214 patients were evaluated: 162 in Group I and 52 in Group II. The distribution of patients with polyps was similar in relation to gender: polyps were evidenced in Group I in 33 (20%) female patients vs. 10 (6%) male patients ($p = 1.00$); in Group II, the presence of polyps was evidenced in 9 (17%) female patients vs. 2 (4%) male patients ($p = 1.00$). Polypoid lesions were found in 54 patients (25%), with 43 (26%) in Group I and 11 (21%) in Group II. The prevalence of adenomas was similar in both groups (Group I = 18/37% vs. Group II = 10/50%) ($p = 0.83$).

Conclusion: In this preliminary study, no correlation was found between prevalence of polyps and a family history of colorectal cancer.

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A prevalência de pólipos colorretais é mais elevada em pacientes com história familiar de câncer colorretal?

R E S U M O

Palavras-chave:

Videocolonoscopia
Pólipos
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Objetivos: Avaliar a prevalência de pólipos em pacientes com história familiar de câncer colorretal comparando com indivíduos assintomáticos com indicação para rastreamento.

Métodos: Estudo prospectivo realizado em um grupo de indivíduos submetidos à colonoscopia entre 2012 e 2014. Os pacientes foram distribuídos em dois grupos: Grupo I: sem história familiar de câncer colorretal e Grupo II: com história familiar em parentes de primeiro grau. Avaliaram-se características demográficas, achados na colonoscopia, presença, localização e tipo histológico dos pólipos, comparando os dois grupos.

Resultados: Foram avaliados 214 pacientes, 162 incluídas no grupo I e 52 no grupo II. A distribuição dos pacientes com pólipos foi similar em relação ao sexo, sendo evidenciado pólipos no Grupo I em 33 (20%) pacientes do sexo feminino vs. 10 (6%) masculino ($p = 1,00$) e no Grupo II, presença de pólipos em pacientes do sexo feminino em 9 (17%) vs. 2 (4%) masculino ($p = 1,00$). Foram encontradas lesões polipóides em 54 pacientes (25%), sendo 43 (26%) no grupo I e 11 (21%) no grupo II. A prevalência de adenomas foi similar em ambos os grupos (Grupo I = 18/37% vs. Grupo II = 10/50%) ($p = 0,83$).

Conclusão: Neste estudo inicial, não foi encontrada correlação entre a prevalência de pólipos e o histórico familiar de câncer colorretal.

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Introduction

Colorectal cancer (CRC) is the third most common cause of cancer worldwide in both genders and the second leading cause in developed countries.¹ In Brazil, the estimated incidence for the year 2014 is 15.44 and 17.24 new cases per 100,000 men and women, respectively.² It is well established that the great majority of CRC cases (adenocarcinomas) is due to benign tumors (adenomas), a process known as adenoma-carcinoma sequence, originally described by Vogelstein.³

Twenty-five percent of CRC cases occur in individuals with at least one first-degree relative (FDR) with a diagnosis of CRC not associated with a known genetic syndrome.⁴ These individuals have, on average, twice the risk vs. general population's risk to develop CRC in their lifetime.⁵

Patients with CRC and their families are candidates for different screening strategies, thanks to the increased risk of developing colorectal cancer and to the possibility of primary and secondary prevention, allowing for a longer survival for patients treated in the early stages of this disease.⁶ Recent studies have favored colonoscopy as the best screening method, for allowing diagnosis and treatment of precursor lesions and obtaining biopsies of suspicious lesions.^{7,8}

Currently, the reality of public health in Brazil, especially in Northeast Region, does not allow full access to colonoscopy screening tests for the whole asymptomatic population (including those with a family history) from the age of 40 to 50 years onward.

In the same line, there are few studies evaluating the specific group of asymptomatic individuals with no family history. Therefore, studies are needed to assess the prevalence of these precursor lesions, aiming to demonstrate, for this population, the benefits of a screening strategy. This study aims to

assess the prevalence of polyps in patients with family history of colorectal cancer, compared to asymptomatic individuals undergoing colonoscopy with indication for a screening procedure.

Methodology

This is a cross-sectional, analytical, prospective, comparative study, including asymptomatic patients who underwent screening colonoscopy at the Hospital Universitário Walter Cantídio, Universidade Federal do Ceará (HUWC/UFC) and at the Coloproctology Center, Hospital São Carlos, in the city of Fortaleza – Ceará, from January 2012 to January 2014. Participants were divided into two groups: Group I – without family history of CRC, and Group II – with a family history of sporadic CRC in FDR. Screening colonoscopy was indicated for patients aged from 50 years onward in asymptomatic individuals without family history (Group I), and for those aged from 40 years onward, or 10 years before CRC diagnosis age in younger individuals, in patients with family history (Group II).

Demographic characteristics such as age, gender, body mass index (BMI) and family history of CRC, as well as data obtained with colonoscopy (quality of colon preparation [good, optimal or bad]), progression of the device until reaching cecum (full examination), presence of polyps, and histopathological examination (histology type for polyps). The study was approved by the Ethics Committee of Hospital Universitário Walter Cantídio.

Patients with family history of familial adenomatous polyposis (FAP); hereditary nonpolyposis colorectal cancer (HNPCC) according to Amsterdam criteria II⁹; with a known

genetic syndrome that arguably increases CRC risk; individuals with a history of colorectal surgery for any cause; with a diagnosis of inflammatory bowel disease (IBD); immunosuppressed individuals, or with symptoms related to colorectal disorders were excluded.

For an evaluation of numerical variables, Student t, Fisher and Chi-squared tests were used. The statistical significance level was set at $p < 0.05$.

Results

A total of 214 patients were included: 47 (22%) male and 167 (78%) female. As for the assessment of body mass index (BMI), 87 (40%) were eutrophic, 67 (31%) with overweight and 60 (28%) were obese patients. In 183 (86%) colonoscopies, the colon was visualized in its entirety, and a good and optimal preparation was described in 62% of tests. In 54 (25%) procedures, a total of 69 colonic polyps were found. The localization of the polyps was: rectum (18/26% polyps), ascending colon (12/17% polyps), descending colon (11/16% polyps), and cecum, transverse colon and sigmoid (10/14.5% 10/14.5% 8/12% polyps, respectively).

From the total of 214 individuals, 162 (76%) were included in Group I (mean age, 56 years; of these, 125 (77%) were female. In Group II, 52 (24%) patients were included (mean age, 54 years);

of these, 42 (81%) were female. No statistical difference was noted between groups, regarding age and gender (Table 1).

Colonoscopy and histopathology findings

In Group I, polyps were seen in 43 (26%) of the 162 examined patients. In Group II, from 52 examinations performed, polyps were found in 11 (21%) patients, without statistical difference between groups ($p = 0.47$). The location of the polyps in colonic areas was similar in both groups (Table 1).

As to gender, the distribution of patients with polyps was similar; in Group I, polyps were evidenced in 33 (20%) female vs. 10 (6%) male patients ($p = 1.00$). In Group II, polyps were evidenced in 9 (17%) female vs. 2 (4%) male patients ($p = 1.00$). When comparing groups, no difference was identified in terms of prevalence of polyps by gender, as follows: male gender in Group I vs. Group II (10/6% vs. 2/4%, $p = 1.00$) and female gender in Group I vs. Group II (33/20% vs. 9/17%, $p = 0.68$) (Table 2). The mean size of polyps in Group I was 0.4 cm, while in Group II was 0.3 cm.

As to the histology of polyps in Group I, in those 43 patients with polyps, a total of 49 polyps was demonstrated, as follows: 18 (37%) adenomatous, 23 (47%) hyperplastic and 8 (16%) inflammatory polyps. In Group II, a total of 20 polyps were identified in 11 patients with positive colonoscopy for presence of polyps, as follows: 9 (45%) adenomatous, 10 (50%)

Table 1 – Characteristics of patients comparing groups with family history vs. no family story for colorectal cancer.

	With no familiar history of CRC	With a positive familiar history for CRC	p
	Group I n (%)	Group II n (%)	
Age	56 ± 12	54 ± 10	0.60
Gender			
Male	37 (23%)	10 (19%)	0.70
Female	125 (77%)	42 (81%)	
Presence of polyps	43 (26%)	11 (21%)	0.47
Location of polyps			
Caecum	8 (16%)	2 (10%)	0.71
Ascending colon	8 (16%)	4 (20%)	0.73
Transverse colon	7 (15%)	3 (15%)	1.00
Descending colon	8 (16%)	3 (15%)	1.00
Sigmoid	5 (10%)	3 (15%)	0.68
Rectum	13 (27%)	5 (25%)	1.00
Total number of patients	162 (76%)	52 (24%)	

CRC, colorectal cancer.

Table 2 – Prevalence of polyps distributed between genders in groups with no family history vs. family story of colorectal cancer.

	Total number of patients	Without polyps		With polyps	
		Without polyps	Gender	With polyps	Gender
Group I	162	27	M	10	M
		92	F	33	F
Group II	52	08	M	02	M
		33	F	09	F

M, male; F, female.

Male patients from Group I vs. Group II (10/6% vs. 2/4%, $p = 1.00$).

Female patients from Group I vs. Group II (33/20% vs. 9/17%, $p = 0.68$).

Table 3 – Histological subtypes of polyps comparing groups with vs. without family history of colorectal cancer.

	Patients n (%)	Adenomatous n (%)	Hyperplastic n (%)	Inflammatory n (%)	Polyps n ^a (%)
Group I	43 (26%)	18 (37%)	23 (47%)	08 (16%)	49 (71%)
Group II	11 (21%)	09 (45%)	10 (50%)	01 (5%)	20 (29%)

$p = 0.83$.

^a In some tests, more than one polypectomy was performed, which justifies the increased number of histological results when compared to the number of exams with polyp.

hyperplastic and 1 (5%) inflammatory polyps, with no statistically significant difference ($p = 0.83$) between groups (Table 3).

Discussion

The risk of developing CRC is of 5%, with an increased risk for people who have close relatives with CRC, especially if diagnosed at an early age.^{10,11} Depending on the family history and the presence of an inherited mutation for CRC, the risk variability for this neoplasia can reach up to 70%.¹¹ Screening programs, including colonoscopy, in individuals with familial CRC as well as in the population in general, reduce the incidence of neoplasia and appear to prevent CRC mortality.^{7,12,13} There is still much discussion to determine if the prevalence and frequency of adenomas in individuals with a family history of CRC are higher than in the general population.^{14–17}

This study evaluated the prevalence of polyps in asymptomatic patients with CRC history in first-degree relatives (Group I) and compared its findings vs. an asymptomatic population with no family history (Group II) who performed their first examination with indication for screening purposes. It has been shown that the distribution of polyps was similar in both groups, and no evidence of a correlation was found between the number of polyps and patients' gender, since the distribution of the polyps was similar in a comparison of female vs. male gender in both groups. The largest number of polyps in females was proportional to the greater number of women in the general population studied, justifying the similarity of distribution of polyps by gender.

In this study, "family history" was considered as the presence of a diagnosis of CRC in first-degree relatives, including the patient's father, mother and children.¹⁸ Using this criterion, the distribution of polyps and the histological type, including adenomatous polyps, were also similar in both groups.

By analyzing the data obtained, it was observed that the number of women undergoing preventive procedures is still higher than that in men, which can be explained by men's historical resistance to seek medical services and also by prejudices related to colonoscopy procedures in men.

It was also observed that the group with a positive family history for CRC (Group II) presented a lower mean age (54 vs. 56 years), when compared to the group with no family history (Group I), but this finding had no statistical significance, even with the advice for starting the screening procedure 10 years before the age of that relative who was diagnosed with the disease.

It was expected a bigger difference between mean ages when comparing the two groups. This finding may reflect the

lack of information and the difficulty of monitoring programs targeted to this risk group in Northeast Region of this country.

Twenty-six percent of individuals with no family history of CRC (Group I) underwent polypectomy, which is in agreement with the literature, although this percentage can vary between 17 and 21%, eventually reaching up to 50%, depending on the age group in question.^{6,10} In the group with a positive family history for CRC (Group II), 21% had polyps detected, with no statistical difference vs. Group I. These results were similar to those described by Zandoná et al.,¹⁹ who evaluated patients with a family history of colorectal cancer compared with patients undergoing colonoscopy with a wide range of indications, showing a percentage of 18% of polyps in the group with a positive family history and 14% in the population with an indication for colonoscopic evaluation.

In a multicenter study, the histology revealed that 37.5% of polyps were adenomatous, most of them tubular adenomas.^{6,10} In an analysis of types of polyps in Groups I and II, our data were similar (37% and 45% of adenomatous polyps, respectively). Corroborating the results of this study, Zandoná et al.¹⁹ confirmed that there was no statistical difference in the prevalence of adenomatous polyps, when comparing patients with a positive family history for CRC vs. symptomatic patients and/or individuals with an indication for colonoscopy.

As to the location of polyps, it is known that an examination of the distal colon (rectum, sigmoid colon, and descending colon) can detect 60–80% of the polyps.⁶ In this study, approximately 54% of the polyps were located in left colon and rectum in both groups, which is in agreement with the literature. However, it is important to note that when one evaluates only the rectum and sigmoid, this percentage of polyp detection, or even of malignant lesion detection, can fall to 40%.⁸ These data reinforce the importance of a full colonoscopy, and not only a flexible rectosigmoidoscopy, as a method of detecting polyps and for prevention of CRC. Studies show that colonoscopy is considered the method of choice for early detection of colorectal cancer.^{6,20} However, this is not a method available in all services, not covering even all patients with indications for this type of assessment.

Notwithstanding the clinical relevance of the subject, this study presents a small number of patients, because we compared patients with a positive family history for CRC undergoing colonoscopy vs. an asymptomatic population undergoing screening for early detection of colorectal cancer. In a scenario of public services, there is still a huge difficulty in providing colonoscopy as a screening method for CRC, in a scenario in which the preference for this procedure goes to symptomatic patients. However, it is critical to expand this series by adding new patients, in order to confirm the results

obtained, as well as for comparison with other reference centers.

Conclusion

In this preliminary study, no correlation between the prevalence of polyps and presence of a family history for CRC was evidenced, since the prevalence and distribution of polyps according to gender and histologic subtype of this group were similar to the population of patients with no family history, who were examined with an indication for CCR screening.

Conflicts of interest

The authors declare no conflicts of interest.

REFERENCES

- Habr-Gama A, Kiss DR, Perez RO. Câncer do Colon, do Reto e do Ânus. In: Clínica Cirúrgica. São Paulo: Manole; 2008. p. 849-99.
- Ministério da Saúde Instituto Nacional do Câncer, Brasil. Estimativa de incidência e mortalidade por câncer no Brasil; 2014. Available from: <http://www.inca.gov.br> [accessed 03.02.14].
- Fearon ER, Vogelstein B. A genetic model for colorectal tumorigenesis. *Cell*. 1990;61:759-67.
- Gordon PH. Malignant neoplasms of the colon. In: Nivatvongs S, Gordon PH, editors. Principles and practice of surgery for the colon, rectum and anus. New York: Informa Healthcare; 2007. p. 490-2.
- Wilschut JA, Steyerberg EW, van Leerdam ME, Lansdorp-Vogelaar I, Habbema JD, van Ballegooijen M. How much colonoscopy screening should be recommended to individuals with various degrees of family history of colorectal cancer? *Cancer*. 2011;117:4166-74.
- Levin B, Lieberman DA, McFarland B, Smith RA, Brooks D, Andrews KS, et al. Screening and surveillance for the early detection of colorectal cancer and adenomatous polyps 2008 a joint guideline from the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology. *CA Cancer J Clin*. 2008;58(3):130-60.
- Winaver SJ, Zauber AG, Ho MN, O'Brien MJ, Gottlieb LS, Sternberg SS, et al. Prevention of Colorectal Cancer' by colonoscopic polypectomy. The National Polyp Study Work-group. *N Engl J Med*. 1993;329:1977-81.
- Lieberman DA, Weiss DG, Bond JH, Ahnen DJ, Garewal H, Chejfec G. Use of colonoscopy to screen asymptomatic adults for colorectal cancer. *N Engl J Med*. 2000;343(3):162-8.
- Vasen HF, Watson P, Mecklin J-P, Lynch HT. New clinical criteria for hereditary nonpolyposis colorectal cancer (HNPCC, Lynch syndrome) proposed by the International Collaborative Group on HNPCC. *Gastroenterology*. 1999;116:1453-6.
- Menges M, Fischinger J, Gärtner B, Georg T, Woerdehoff D, Maier M, et al. Screening colonoscopy in 40- to 50-year-old first-degree relatives of patients with colorectal cancer is efficient: a controlled multicentre study. *Int J Colorectal Dis*. 2006;21:301-7.
- Fuchs CS, Giovanni EL, Colditz GA, Hunter DJ, Speizer FE, Willett WC. Family history increases the risk of colorectal cancer. *Gastroenterology*. 1995;109:1015-7.
- Järvinen HJ, Mecklin J-P, Sistonen P. Screening reduces colorectal cancer rate in families with hereditary nonpolyposis colorectal cancer. *Gastroenterology*. 1995;108:1405-11.
- Järvinen HJ, Aarnio M, Mustonen H, Aktan-Collan K, Aaltonen LA, Peltomäki P, et al. Controlled 15-year trial on screening for colorectal cancer in hereditary nonpolyposis colorectal cancer. *Gastroenterology*. 2000;118:829-34.
- Lanspa JS, Lynch HT, Smyrk TC, Strayhorn P, Watson P, Lynch JF, et al. Colorectal adenomas in the Lynch syndromes. Results of a colonoscopy screening program. *Gastroenterology*. 1990;98:1117-22.
- Jass JR, Stewart SM. Evolution of hereditary non-polyposis colorectal cancer. *Gut*. 1992;33:783-6.
- Ponz de Leon M, Della Casa G, Benatti P, Percesepe A, di Gregorio C, Fante R, et al. Frequency and type of colorectal tumors in asymptomatic high-risk individuals in families with hereditary nonpolyposis colorectal cancer. *Cancer Epidemiol Biomark Prev*. 1998;7:639-41.
- Jass JR, Stewart SM, Stewart J, Lane MR. Hereditary non-polyposis colorectal cancer—morphologies, genes and mutations. *Mutat Res*. 1994;3(10):125-33.
- Puente Gutierrez J, Marin Moreno MA, Dominguez Jimenez JL, Bernal Blanco E, Díaz Iglesias JM. Effectiveness of a colonoscopic screening programme in first-degree relatives of patients with colorectal cancer. *Colorectal Dis*. 2011;13:145-53.
- Zandoná B, De Carvalho LP, Schimmedt J, Koppe DC, Koshimizu RT, Mallmann ACM. Prevalência de adenomas colorretais em pacientes com história familiar para câncer colorretal. *Rev bras Coloproctol*. 2001;13:147-54.
- Burt RW. Colon cancer screening. *Gastroenterology*. 2000;119:837-53.