



Journal of Coloproctology

www.jcol.org.br



Original Article

Fecal occult blood test and flexible rectosigmoidoscopy: tools for the screening of colorectal neoplasms in asymptomatic patients[☆]



Mario Jorge Jucá^{a,*}, Paulo Roberto Torres Assunção^a,
Hermann Nogueira Hasten-Reiter Júnior^b

^a Faculty of Medicine, Universidade Federal de Alagoas (UFAL), Maceió, AL, Brazil

^b CESMAC Centro Educacional, Maceió, AL, Brazil

ARTICLE INFO

Article history:

Received 3 March 2014

Accepted 8 July 2014

Available online 28 January 2015

Keywords:

Colorectal neoplasms

Diagnosis

Occult blood

ABSTRACT

Purpose: To assess the feasibility and effectiveness of the fecal occult blood test (FOBT) and flexible rectosigmoidoscopy (RSS), as tools used in the CRC screening, in asymptomatic patients, from 50 years of age.

Methods: The study is transversal and presents a sample of 102 individuals. The FOBT used was the guaiaco, FECA-CULT[®] method, held at a single time, in feces collected from a complete evacuation. Individuals, who presented the positive FOBT, were sent to colonoscopy complement, although this is not primary variable examined in this study. All subjects underwent to flexible RSS, after bowel preparation, using a solution of sodium phosphate monobasic monohydrate and dibasic sodium phosphate heptahydrate.

Results: Individuals showed minimum age of 50 years and maximum 82 years, 61.6 years average and standard deviation +8.1. Of the 102 individuals, 42 (41%) belong to the males, whereas 60 (58.8%) female. The FOBT presented 10 positive cases (9.8%) (IC 95%: 4.8–17.3%) and 92 negative cases (90.2%) (IC 95%: 82.7–95.2%). The FOBT was effective at 2.9% and presented false-positive result in 6.9%. The result of the FBOT association with flexible RSS showed that 70% of neoplastic polyps showed no bleeding. Its sensitivity was 30% (IC 95%: 0.00–63.40%), the value of the relative risk was 3.94 (IC 95%: 1.20–12.89) and 5.20 valued odds ratio (IC 95%: –23.15 to 1.21). The specificity was 92.40% (IC 95%: 86.43–98.35%). The flexible RSS detected 15 polyps, among which, after histopathological study, 10 were neoplastic, being 09 adenomatous polyps (60%) and 01 malignity (6.7%) (IC 95%: 0.20–31.90%) and 05 non-neoplastic polyps (33.3%), and 03 inflammatory polyps (20%) (IC 95%: 4.3–48.1%) and 02 hyperplastic polyps (13.3%) (IC 95%: 1.7–40.5%). Neoplastic polyps were present in 60% of individuals over 60 years of age. Among the adenomatous polyps, the adenomatous polyp tubular prevalence is 53.33%. Among the 102 individuals, flexible RSS detected 09 adenomatous polyps (8.82%) and 01 (0.98%) malignity polyp.

[☆] Research performed at University Hospital Professor Alberto Antunes, Universidade Federal de Alagoas (UFAL), Maceió, AL, Brazil.

* Corresponding author.

E-mail: mariojuca@hotmail.com (M.J. Jucá).

<http://dx.doi.org/10.1016/j.jcol.2015.01.002>

2237-9363/© 2015 Sociedade Brasileira de Coloproctologia. Published by Elsevier Editora Ltda. All rights reserved.

Conclusion: The tools FOBT and flexible RSS presented feasibility and, when associated demonstrated statistical significance in detecting polyps in general and important clinical significance on the detection of adenomatous polyps and colorectal cancer.

© 2015 Sociedade Brasileira de Coloproctologia. Published by Elsevier Editora Ltda. All rights reserved.

Teste de sangue oculto nas fezes e retossigmoidoscopia flexível: instrumentos para o rastreamento de neoplasias colorretais em pacientes assintomáticos

R E S U M O

Palavras-chave:

Neoplasias colorretais
Diagnóstico
Sangue oculto

Objetivo: Avaliar a viabilidade e eficácia do teste de sangue oculto nas fezes (TSOF) e retossigmoidoscopia (RSS) flexível, como instrumentos utilizados na triagem do CCR, em pacientes assintomáticos a partir dos 50 anos.

Métodos: Esse é um estudo transversal e apresenta uma amostra de 102 indivíduos. O TSOF utilizado foi o método do guaiaco FECA-CULT®, realizado em uma única vez, em fezes coletadas de uma evacuação completa. Indivíduos com TSOF positivo foram encaminhados para o complemento de colonoscopia, embora essa não seja a variável primária examinada neste estudo. Todos os pacientes foram submetidos a uma RSS flexível, após a preparação do intestino com o uso de uma solução de fosfato de sódio monobásico mono-hidratado e de fosfato de sódio dibásico hepta-hidratado.

Resultados: Os participantes tinham idade mínima de 50 anos e máxima de 82 anos (média \pm desvio padrão, 61,6 \pm 8,1 anos). Dos 102 pacientes, 42 (41%) eram homens, enquanto 60 (58,8%) eram mulheres. O TSOF revelou 10 casos positivos (9,8%) (IC 95%: 4,8-17,3%) e 92 casos negativos (90,2%) (IC 95%: 82,7-95,2%). O TSOF foi eficaz em 2,9% e apresentou resultado falso-positivo em 6,9%. O resultado da associação de TSOF com RSS flexível demonstrou que 70% dos pólipos neoplásicos não exibiam qualquer sangramento. Sua sensibilidade foi de 30% (IC 95%: 0,00-63,40%), com risco relativo de 3,94 (IC 95%: 1,20-12,89) e razão de sensibilidade (odds ratio) de 5,20 (IC 95%: 1,21-23,15). A especificidade da associação foi de 92,40% (IC 95%: 86,43-98,35%). A RSS flexível detectou 15 pólipos, tendo sido constatado que, depois do estudo histopatológico, 10 eram neoplásicos: 9 pólipos adenomatosos (60%) e 1 malignidade (6,7%) (IC 95%: 0,20-31,90%). Além disso, a RSS flexível detectou 5 pólipos não neoplásicos (33,3%): 3 pólipos inflamatórios (20%) (IC 95%: 4,3-48,1%) e 2 pólipos hiperplásicos (13,3%) (IC 95%: 1,7% -40,5%). Os pólipos neoplásicos estavam presentes em 60% dos pacientes com mais de 60 anos de idade. Entre os pólipos adenomatosos, houve prevalência tubular de pólipos adenomatosos em 53,33%. Entre os 102 indivíduos, a RSS flexível detectou 9 pólipos adenomatosos (8,82%) e 1 (0,98%) pólipos maligno.

Conclusão: Foi constatada a viabilidade dos instrumentos TSOF e RSS flexível; quando associados, demonstraram significância estatística na detecção de pólipos em geral e importante significado clínico para a detecção de pólipos adenomatosos e do câncer colorretal.

© 2015 Sociedade Brasileira de Coloproctologia. Publicado por Elsevier Editora Ltda. Todos os direitos reservados.

Introduction

Colorectal cancer (CRC) remains the second most common cause of cancer mortality in the United States and the fourth in Brazil, with incidence and mortality equal to both genders. Although tracing reduce mortality, by removing the cancer in initial stage and the cancer precursor lesions, known as adenomatous polyps, the preventive procedures are very scarce, because of doctors, patients and health system resistance.¹

The CRC is the third most common cancer in the world and the mortality rate has been kept the same, over the

past fifty years.² Tracing means using simple tests that can be applied to the population at risk for developing the disease, even asymptomatic, in order to be diagnosed precursor lesion of CRC or even cancer, in initial stage. The natural evolution of the adenomatous polyp to the adenocarcinoma is recognized. However, the sequence since the emergence of adenoma, growth to malignization lasts about 10 years, favorable time for the risk population to undergo the CRC screening and reduce the mortality rate by CRC, in relation to a population control, not subjected to the screening.^{3,4}

The CRC screening is justified by the high incidence of the CRC and by the opportunity to make the diagnosis of

adenomatous polyps and CRC in the initial stage, with significant therapeutic result in population at risk. In asymptomatic patients survival among five years reaches 80–90%, if the tumor is confined to the intestinal wall. Therefore, it should educate the population about the importance of the CRC screening, to decrease its incidence.⁵

The aim of this study is to evaluate the feasibility, effectiveness of flexible rectosigmoidoscopy and fecal occult blood test, as tools in the prevention of colorectal cancer in asymptomatic individuals and low-risk.

Methods

The sample analyses by sectional form 102 asymptomatic individuals, aged 50 years old or more, from various regions of the State of Alagoas.

The individuals which were included in this sample performed the following criteria: equal or higher age than 50 years old, asymptomatic with regard to colorectal complaints. Patients which showed alarm signs, such as abdominal pain, altered intestinal transit, visible presence of blood with or without mucous in feces and tenesmus were excluded from this research. The one who reported the presence of CRC on early familiar history and/or personal history and those who refused to participate in the research protocol were also excluded from this screening.

The following variables were analyzed: age, being investigated individuals from 50 years old, considering being target for tracing, for presenting low risk to develop the CRC. As regard to gender, there was no selection. The fecal occult blood test and flexible rectosigmoidoscopy followed the guidance of elaborate design, in which all individuals underwent initially to FOBT then the flexible RSS, only those with positive FOBT were then examined by colonoscopy.

The individuals were advised to avoid red meat and foods with high peroxidase activity, such as radish, turnip, cauliflower and broccoli, for 3 days prior to the exam and on the day of collection. They were also advised not to take anti-inflammatory drugs, corticosteroids, aspirin, iron, anti-coagulant, colchicine, iodine, bromides, boric acid, reserpine, laxative and vitamin C. It was allowed fruits and vegetables, preferably boiled.

All of them received guidance to avoid the collection of feces, when there is bleeding hemorrhoids, bleeding in the gums mucous or during menstrual period. Then, the feces of a complete evacuation were collected and analyzed on the same day. The fecal occult blood test (FOBT) was held by FECA – CULT®, also known in clinical practice as *guaiac* method, having as characteristic a special paper tape, impregnated with resin natural *guaiac*.

The FOBT was conducted prior the rectosigmoidoscopy, to avoid false-positive result, caused by blood from biopsy, polypectomy or even minor traumas in colonic mucosa.

For the realization of flexible RSS, the individual has undergone a intestine preparation, using the contents of two vials, each containing 130 mL of sodium phosphate solution monobasic monohydrate (16 g/100 mL) and sodium phosphate dibasic heptahydrate (6 g/100 mL). This enema was used 2 and 1 h before the endoscopic examination.

These examinations were held at the coloproctology service of the University Hospital Prof. Alberto Antunes, of the Federal University of Alagoas.

The colonoscopy was not a primary tool used in this screening, but it was mandatory in the immediate follow-up examination of individuals who presented positive FOBT and in patients where adenomatous polyp was detected with a high degree of dysplasia and/or malignancy polyp, even with the negative FOBT, considering higher chance of being diagnosed synchronous neoplastic lesions, in the proximal colon of these individuals. All lesions were sent for histopathological diagnosis, hematoxylin–eosin technique.

For statistical analysis we used the program Epi-Info version 3.4.3, obtaining risk odds ratio, relative risk, the Fisher exact test, Chi square and adhesion chi square, all with 95% IC. Sensitivity and specificity were undertaken by EPIDAT, version 3.1, using the 95% confidence interval.

Results

The colorectal cancer screening, using the FOBT tools and flexible RSS, was held in 102 asymptomatic individuals with regard to the complaints colorectal clinical, from 50 years of age, in population considered low-risk.

The age of the individuals, who participated in the CRC screening, showed minimum value of 50 years old and a maximum of 82 years old, 61.6 years old average and standard deviation of ± 8.1 . Considering a classification by age group every five years old, between 50 and 82 years old, it was observed that there was no change in the frequency for the first three age groups, between 68 and 82 years old, the frequency was 23.5% (IC 95%: 15.7–33%).

Of the 102 individuals subjected to screening, 42 (41.2%) belong to males and 60 (58.8%) female (χ^2 (accession) 95% = 6.35; $p = 0.012$).

Among the 102 individuals, who underwent the fecal occult blood test, 10 (9.8%) (IC 95%: 4.8–17.3%), showed positive result and 92 (90.2%) (IC 95%: 82.7–95.2%), showed a negative result. Of the ten individuals with positive FOBT, 06 belong to males. To analyze the sensitivity of FOBT, there was the need to use the endoscopic results obtained by flexible RSS. The FOBT presented low sensitivity of 30% (IC 95%: 0.00–63.40%), however, the specificity was 92.4% (IC 95%: 86.43–98.35%), when considered the flexible RSS positive for detection of neoplastic polyps in 102 individuals, admitting being the flexible RSS the best method to detect lesions in the distal colon. The FOBT was effective in only 2.9% (3/102) and presented false-positive result of 6.9% (7/102) (Table 1).

The data of positive FOBT associated to the flexible RSS was able to detect 5.2 times more neoplastic lesions than the negative FOBT, demonstrated by the Odds ratio: 5.20 (IC 95%: 1.21–23.16) (Table 1). The relative risk was 3.94 (IC 95%: 1.20–12.89) and the Fisher exact test resulted in $p = 0.057$. The association of data FOBT with those of flexible RSS showed that 70% of neoplastic polyps showed no bleeding.

Among the 07 individuals with false-positive FOBT, therefore not associated with lesions to the flexible RSS, there was a patient who, despite having presented the false-positive FOBT, when compared to the flexible RSS and colonoscopy

Table 1 – Comparison of the fecal occult blood test with neoplastic polyps detected by flexible rectosigmoidoscopy.

FBOT	RSS		
	Endoscopic findings		
	Positive	Negative	Total
Positive	03 (TP)	07 (FP)	10
Negative	07 (FN)	85 (TN)	92
Total	10	92	102

TP, true-positive; FP, false-positive; FN, false negative; TN, true negative.

complement, was considered positive FOBT as to digestive tract, to have been its dyspeptic complaint so valued and who demanded an investigation, which demonstrated high endoscopic gastric cancer *in situ*.

Among the 10 individuals with positive FOBT 04 presented polyps to flexible RSS (Table 2), among whom 03 were adenomatous polyps, being diagnosed 02 tubular adenomas and 01 villous-tubule adenoma, all with low grade dysplasia and 01 inflammatory polyp. The FOBT presented positive predictive value of 30% of neoplastic polyps. Among 92 individuals with negative FOBT, 11 had polyps, being 06 adenomatous, 01 malignancy and 04 not neoplastic. The polyps association generally with FOBT presented a Fischer exact test with $p=0.04$, demonstrating statistical significance.

The flexible RSS presented seven (70% [7/10]) individuals with associated injury to positive FOBT and 48 (52.2% [48/92]) individuals with associated injury negative FOBT, Odds ratio = 2.14 (IC 95%: 0.52–8.79) and Fisher exact test with result of $p=0.23$ (Table 2).

The flexible rectosigmoidoscopy presented lesions in 55 individuals (53.92%) (IC 95%: 43.8–63.8) and absence of lesions in 47 (46.1%) (IC 95%: 36.2–56.2). Among the injured, were detected 15 polyps (14.7%) (IC 95%: 8.5–23.1%), 19 inflammatory processes (18.6%) (IC 95%: 11.6–27.6%) and 21 diverticula (20.6%) (IC 95%: 13.2–29.7%) (Table 3).

15 polyps were detected and removed and after histopathological study, 09 adenomatous (60%); 01 malignancy (6.7%), (IC 95%: 0.2–31.9%); 05 non-neoplastic (33.3%), and of these, 03 were inflammatory (20%), (95% CI: 4.3–48.1%) and 02 hyperplastic (13.3%), (IC 95%: 1.7–40.5%) (Table 4).

Of the 15 polyps, 10 were neoplastic polyps, which 07 were tubular adenomatous with low dysplasia grade (46.7%) (IC 95%: 21.3–73.4%); 01 adenomatous villous-tubule, also with

Table 3 – Distribution of flexible rectosigmoidoscopy findings.

Rectosigmoidoscopy	Frequency	Percentage
Normal	47	46.1
Inflammatory process	19	18.6
Diverticulum	21	20.6
Polyp	15	14.7
Total	102	100.0

Table 4 – Global distribution of histopathological results concerning polyps.

Polypectomy/histopathology	Frequency	Percentage
Hyperplastic polyp	2	13.3
Inflammatory polyp	3	20.0
Adenomatous polyp with tubular low-grade dysplasia	7	46.6
Adenomatous polyp with tubular high grade dysplasia	1	6.7
Adenomatous polyp villous-tubule without high grade dysplasia	1	6.7
Malignity polyp	1	6.7
Total	15	100

low grade dysplasia (6.7%) (IC 95%: 0.2–31.9%); 01 tubular adenomatous, with high-grade dysplasia 6.7% (IC 95%: 0.2–31.9%) and 01 adenocarcinoma *in situ* 6.7% (IC 95%: 0.2–31.9%). It was observed that 80% of these polyps were detected in females, with the diagnosis of adenomatous polyp villous-tubule with low grade dysplasia.

When the lesions detected by flexible RSS were associated with sex (Table 5), it was observed that these lesions were present in 61.9% (26/42) of males and 48.3% (29/60) of females (OR = 1.74 [IC 95%: 0.72–4.20]), χ^2 Yates = 1.33 and with result of $p=0.25$.

When only the polyps were related to gender, it was observed that these lesions were present in 16.67% (10/60) of the females and 11.9% (5/42) of males (OR = 1.48 [IC 95% = 0.42–5.49]), χ^2 Yates = 0.15 and with result of $p=0.70$.

The distribution of neoplastic polyps, by age groups, with range every five years, between 50 and 85 years old, showed that 60% of them were aged over 60 years old (IC 95%: 26.2–87.8%).

The patient in which the malignity polyp was detected, after polypectomy, pathology results revealed that it was a flap polyp with 1.3 cm, covered by mucosa of large intestine, displaying neoplasm of epithelial source, characterized by the

Table 2 – Distribution of lesions detected by flexible rectosigmoidoscopy, associated with the fecal occult blood test.

FOBT	Flexible rectosigmoidoscopy								Total	%
	Normal	%	Inflammatory process	%	Diverticulum	%	Polyp	%		
Positive test	3	2.94	2	1.96	1	0.98	4 ^a	3.92	10	9.8
Negative test	44	43.14	17	16.67	20	19.61	11 ^b	10.78	92	90.2
Total	47	46.08	19	18.63	21	20.59	15	14.70	102	100.0

^a 03 adenomatous polyps and 01 inflammatory.

^b 06 adenomatous polyps, 01 malignity polyp, 02 inflammatory and 02 hyperplastic.

Table 5 – Distribution of lesions detected by flexible rectosigmoidoscopy with regards to sex.

Sex	Flexible rectosigmoidoscopy									
	Normal	%	Inflammatory process	%	Diverticulum	%	Polyp	%	Total	%
Male	16	15.69	9	8.82	12	11.76	5 ^a	4.91	42	41.18
Female	31	30.40	10	9.80	9	8.82	10 ^b	9.80	60	58.82
Total	47	46.09	19	18.62	21	20.58	15	14.71	102	10,000

^a 02 adenomatous polyps, 02 inflammatory and 01 hyperplastic.

^b 07 adenomatous polyps, 01 malignity, 01 inflammatory and 01 hyperplastic.

proliferation of complex tubular glands and anastomosed, plus digitorum projections, coated by pseudo-stratified epithelium, whose cells reveal the absence of intracytoplasmic mucin and cores with total loss of polarity, pleomorphism, *hipercromasia* and evident nucleoli. In such areas, the neoplasia infiltrates the own lamina. The diagnosis was moderately differentiated tubular adenocarcinoma occurring in villous-tubule adenoma with high-grade dysplasia. Considering the infiltration of adenocarcinoma in the chorion (Level I, Haggitt classification) and the presentation of moderate degree of differentiation, this patient, 59 years old, was submitted to *retossigmoidectomy*, whose segment measured 13 cm and revealed the absence of residual neoplasia in various cuts made, absence of metastasis in resected 23 lymph nodes and free surgical margins.

Of the 102 individuals, 10 underwent to colonic mucosal biopsy and all showed nonspecific inflammatory process, 09 observed discrete intensity processes and 01 presented a moderate one.

The colonoscopy, also not having been a primary tool used in this screening, was held in 10 individuals with positive FOBT, in a 61 years old patient, who presented adenomatous polyp with high degree of dysplasia in the sigmoid and in another 58 years old patient, who presented a malignity polyp in sigmoid, both detected by flexible RSS. The colonoscopy was also indicated for these two patients, considering higher chance of being diagnosed polyps in the colon proximal synchronous.

The complementary colonoscopy, performed in these twelve patients, detected only one adenomatous polyp with low-grade dysplasia in the descending colon, near the splenic flexure, synchronous to the other two adenomatous polyps, one with sigmoid location and another in the rectum, both with low grade dysplasia, in a patient with 75 years old with positive FOBT.

Discussion

Colorectal cancer is the third cause of mortality in the world, mainly in the occident; its incidence has been showing up-lope. In Brazil, in the Southeast, the CRC is the second most frequent cancer in women; in the South, the Northeast and the Midwest is the third most common cancer in women and finally in the North is the fifth most common cancer in women.⁶

All individuals presented a higher risk to develop the CRC, after 50 years old, similar to that proposed for study in the

literature⁷ and similar yet, to the outline established in this study.

In this research, the casuistry showed a frequency of 60% of neoplastic polyps in individuals over 60 years old. This result is in agreement with the literature consulted, which shows the high presence of neoplastic lesions in elderly individuals, mostly from the sixth decade of life. Age is considered the most important single factor for the development of polyps in the low-risk group. Although the risk exists before 50 years old, more than 90% of individuals with CRC exceeded this age, doubling the risk for each decade of life, in which the frequency of colorectal neoplasms was higher between 50 and 70 years old,¹ compatible with the findings of this research.

In relation to the distribution by sex, there was a predominance of the female gender (58.8%) with statistical significance, similar to these findings were found in similar research,^{8,9} of which more than 50% of individuals investigated were female. The adhesion between the genders in this tracing program was also greater in females, with a result similar to that found by other study,¹⁰ in which the males showed more resistance to CRC screening.

The occult blood test, given in this study as a tool to detect premalignant lesions and colorectal cancer, is based on world literature which uses, in most screening programs for colorectal cancer, this type of procedure, although it is recognized their limitations.

The positive FOBT, indicating the presence of bleeding, also suffers interference, which can distort the result, such as diet, medications, and the presence of lesions that are bleeding in another place than the colon, as well as the size of the polyp. This finding was made in this research, because the size of the malignity polyp was detected exceeding 1 cm, its staging was initial (*in situ* lesion) and its morphology is not ulcerated, showing negative FOBT. This finding confirms the low sensitivity of this method found in this study, which had already been stated by others,^{7,11} which found negative tests with positive lesions, in percentages ranging from 35% to 50% of the individuals studied.

The FOBT sensitivity of this study was 30%, according to data from literature, that report to be the initial low sensitivity, about 30–50%, although programs that use annual FOBT, of long sequencing, are capable of detecting up to 92% of cancers.¹²

The low sensitivity of the method can result in high operating cost, due to the patients, with false-positive FOBT, having to undergo the more complex and expensive tests, which was demonstrated in this study, that among the 10 individuals with FOBT initially positive, 07(70%) did not show lesions to

the colonoscopy, but this fact does not diminish the chance to detect colorectal neoplasia, what happens with the false-negatives.^{2,7}

A favorable statistic in FOBT is the high specificity. In this study was 92.39%, while according to another that has shown similar value of specificity of the test in around 96–98%.¹¹

Among the 102 individuals studied in this research, 10 presented the positive FOBT and, when compared with the flexible RSS, this detected 03 adenomatous polyps, which may say that the frequency of neoplastic lesions detected by flexible RSS membership with FOBT was 2.9% (3/102), comparable to finding research that claims to have been the rate of adenomas in people with positive FOBT around 1–4%.¹¹

The positive FOBT revealed, when compared with the flexible RSS, a strong chance to detect neoplastic polyps 5.2 times more than the negative FOBT, analyzed by Odds ratio 5.20 (IC 95%: –23.16 to 1.21), with important clinical significance. The relative risk was 3.94, a similar found observed on a similar study, by saying that the relative risk of neoplasia in individuals with positive FOBT was 3.47 (IC 95%: 2.76–4.35), when compared with those with negative FOBT.¹³

Using the fecal occult blood test still shows controversy, however, due to its low cost, feasibility and for being non-invasive examination, is still considered an appropriate method for tracing low-risk population.

The flexible rectosigmoidoscopy was the endoscopic instrument used in this study of colorectal cancer, taking as arguments being a simple exam, more accessible, easier attainment by doctors without the need for sedation, with fewer complications, and even with acceptable cost-benefit to be applied in population tracing for detection of precursor lesions of the CRC and the carcinoma in initial stage, besides the possibility of performing the polypectomy and the biopsy.⁴

Another strong justification for its realization is that the majority of colorectal tumors is located within reach of rectosigmoidoscopy, as demonstrated in a study earlier conducted.¹⁴

During the flexible RSS, held on this research, 15 polyps were detected and removed (14.71%), which were sent for histopathologic study, which identified 10 neoplastic polyps and 05 non-neoplastic; similarity found in another study where polyps detected between a range of 2.3–12.3%.¹⁵

This study has detected false positive tests in 6.9% of 102 individuals, with a single FOBT and that, when associated with the flexible RSS, increased safety and efficiency in detecting lesions of distal location.

The decision to perform the complimentary colonoscopy, after detecting distal neoplasia by flexible RSS, should be evaluated case-by-case, considering individual over the age of 65 years old, histopathological result showing villous adenoma with size greater than or equal to 1 cm, mainly the one that present high grade dysplasia, multiple distal adenomas and personal and/or family history positive for CRC due to the possibility of detecting synchronic neoplasia in proximal colon.¹⁶ This decision was adopted in this study, three individuals who underwent colonoscopy, considering that this is a case with polyp with high-grade dysplasia, another with malignity polyp and even another one with multiple adenomatous polyps, with a low degree of dysplasia, synchronous, all located in distal colon and detected by flexible RSS.

In Brazil, the CRC screening did not satisfactorily achieve population studies, due to the precariousness of the national health system, the poor dissemination of methods of prevention among healthcare professionals, the high cost of some requested tests and demotivation of asymptomatic patients, to be subject to endoscopic examinations and to FOBT,^{1,4} the challenges also occurred in this study with limitations and difficulties, which have only been overcome with great obstinacy of researchers in making the program.

In this study, 53.33% of polyps were diagnosed as being tubular adenomatous, similar findings of the study where it was found 53.9% tubular adenomatous polyps of the 286 resected polyps.¹⁷

Among the 102 asymptomatic individuals examined, there was a frequency of 01 malignity polyp (0.98%), referred earlier, and ratified to the results of similar studies, where there has been detection of 1% and 1.42% of CRC in asymptomatic patients.^{17,18} The data of this research show that 80% of neoplastic polyps were detected in females, similar fact observed by similar study that reported the presence of 64% of neoplastic polyps in female, in a sampling that 57.3% of 68 individuals studied belonged to this sex. It is not known the reason of this behavior.⁹

However, when the endoscopic findings refer to the polyps in general, it was observed that there was no prevalence between the genders, evidenced by the lack of statistical significance as demonstrated in the results. Another study got identical results, in which the frequency of colorectal polyps was statistically equal to the two genders.¹⁹

The progression adenoma-adenocarcinoma is recognized and adenomatous polyps, which show villous component in its structure, have a higher risk of developing the CRC; this phenomenon was observed in this research in a patient with 58 years old, which presented malignity polyp in sigmoid, coexisting in the same polyp villous component and high grade dysplasia. The most effective method for the diagnosis of colorectal lesions premalignant and malignant is the colonoscopy. However, for conducting a population screening, colonoscopy has a high cost, increased risk of complications and the need for sedation of patients.²⁰

Given this, the flexible rectosigmoidoscopy is an examination accessible to most health services, bringing, when associated with the fecal occult blood test, great clinic contribution to colorectal cancer screening.

Conclusion

Based on the results of this study, it can be concluded that the fecal occult blood test and flexible rectosigmoidoscopy are feasible and efficient tools when associated, in detecting polyps in general and of important clinical significance on detection of premalignant and neoplastic lesions of colorectal cancer in asymptomatic individuals and low-risk.

Conflicts of interest

The authors declare no conflicts of interest.

REFERENCES

1. Bertges ER, Moraes-Filho JPP. Câncer colorretal: rastreamento e vigilância. *GED*. 2006;25:110-8.
2. Almeida FFN, Araújo SEA, Santos FPS, Franco CJCS, Santos VR, Nahas SC, et al. Colorectal cancer screening. *Rev Hosp Clin Fac Med S Paulo*. 2000;55:35-42.
3. Burt RW. Colon cancer screening. *Gastroenterology*. 2000;119:837-53.
4. Habr-Gama A. Câncer colorretal – A importância de sua prevenção. *Arq Gastroenterol*. 2005;42:2-3.
5. Helm J, Choi J, Sutphen R, Barthel JS, Albrecht TL, Chirikos TN. Current and evolving strategies for colorectal cancer screening. *Cancer Control*. 2003;10:193-204.
6. INCA. Estimativa da incidência do câncer no Brasil em; 2008. Available from: <http://www.inca.gov.br> (accessed 27.03.08).
7. Altenburg FLL, Biondo-Simões MLP, Santiago A. Pesquisa de sangue oculto nas fezes e correlações com alterações nas colonoscopias. *Rev Bras Coloproctol*. 2007;27:304-9.
8. Diógenes CVVN, Marianelli R, Soares RPS, Abud RM, Falleiros V, Vilariño TC, et al. Achados de retossigmoidoscopias no rastreamento de câncer colorretal em pacientes assintomáticos acima de 50 anos. *Rev Bras Coloproctol*. 2007;27:403-7.
9. Ferrari AP, Rocha BP, Forones NM. Freqüência de pólipos em doentes operados de câncer colorretal. *Arq Gastroenterol*. 2000;37:31-4.
10. Brambilla E, Dal Ponte MA, Buiffon VR, Fellini RT, Dal Bosco A, May RS. Aderência ao controle colonoscópico nos pacientes submetidos à ressecção endoscópica de adenomas. *Rev Bras Coloproctol*. 2006;26:249-52.
11. Morikawa T, Kato J, Yamaji Y, Wada R, Mitsushima T, Shiratory YA. A comparison of the immunochemical fecal occult blood test and total colonoscopy in the asymptomatic population. *Gastroenterology*. 2005;129:422-8.
12. Mandel JS, Bond JH, Church TR, Snover DC, Bradley GM, Schuman LM, et al. The Minnesota colon cancer control study. Reducing mortality from colorectal cancer by screening for fecal occult blood. *N Engl J Med*. 1993;328:1365-71.
13. Lieberman DA, Harford WV, Ahnen DJ, Provenzale D, Sontag SJ, Schnell TG, et al. One-time screening for colorectal cancer with combined fecal occult-blood testing and examination of the distal colon. *N Engl J Med*. 2001;345:555-60.
14. Jucá MJ. Survival after resection for adenocarcinoma of the colon comparison between right and left colons. *Dis Colon Rectum*. 2004;46:1018.
15. Crespi M, Weissman GS, Gilbertsen VA, Winawer JS, Sherlock P. The role of proctosigmoidoscopy in screening for colorectal neoplasia. *CA: Cancer J Clin*. 1984;34:158-66.
16. Levin TR, Palitz A, Grossman S, Conell C, Finkler L, Ackerson L, et al. Predicting advanced proximal colonic neoplasia with screening sigmoidoscopy. *JAMA*. 1999;281:1611-7.
17. Manzione CR, Nadal SR, Nadal MA, Melo SVM. Análise morfológica e histológica de pólipos colorretais submetidos à ressecção endoscópica. *Rev Bras Coloproctol*. 2004;24:119-25.
18. Greegor DR. Occult blood testing for detection of asymptomatic colon cancer. *Cancer*. 1971;28:131-4.
19. Hossne RS, Maranhão MF, Carvalho FA, Mendes FG. Estudo retrospectivo do resultado anatomopatológico de 100 polipectomias colonoscópicas realizadas na FMB-UNESP. *Rev Bras Coloproctol*. 2007;27:251-5.
20. Ferrari-Júnior AP, Nakao FS, Cury MS. Colonoscopia ou retossigmoidoscopia: risco de lesões isoladas no cólon direito. *Arq Gastroenterol*. 2001;38:168-71.