Original Article

Questionnaire assessment based on signs, symptoms and history in the prevention of colorectal cancer

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ABSTRACT: Introduction: Colorectal cancer (CRC) is an important pathology characterized by tumors in colorectal segments. Colonoscopy is the gold standard of CRC detection, but it is very expensive. Then, new methods are required for CRC screening to reduce mortality and improve the cost-benefit ratio. Objective: Evaluate the efficacy of a questionnaire (QSSA) based on signs and symptoms of CRC. Methods: The QSSA was answered by 40 patients, before the colonoscopy procedure. The patients were divided into two groups: group I, with 20 patients showing positive result in the questionnaire, and group II, with 20 people showing negative result in the questionnaire. Colonoscopy was considered positive when presenting neoplasm or its precursor. The result was statistically analyzed by Fischer's exact test and sensitivity calculation. Results: The results showed 14 positive and 26 negative colonoscopies. Group I had 9 positive and 11 negative colonoscopies and Group II, 5 positive and 15 negative (p=0.20) colonoscopies. The questionnaire presented sensitivity of 64.2%. Conclusion: The use of this questionnaire based on signs and symptoms of CCR alone was not effective in CCR screening.

Keywords: colorectal cancer; questionnaire; mass screening; diagnosis; primary prevention.

INTRODUCTION

Colorectal cancer (CRC) is a pathology characterized by tumors in the colorectal segments[1]. In terms of incidence, colorectal cancer is the fourth most frequent cause of cancer in the world and the second cause in developed countries[2-4].

In Brazil, the National Cancer Institute (INCA) estimated, in 2010, 14 new cases of CRC in each 100,000 men and 15 in each 100,000 women[5].

In this scenario, prevention programs have been an attractive option to reduce the incidence and mortality of CRC[6,7], despite the population resistance to participate, which can influence their the program effectiveness[6].

Colonoscopy is the gold standard of CRC detection, accounting for the pathology decline[8-10]. However, it involves high cost and long time to perform it in the public health system in Brazil, as well as the inherent risks from the exam. Then, effective methods are required for CRC screening to reduce mortality and improve the cost-benefit ratio[11,12].

Almost all CRC prevention programs are based on screenings performed with fecal occult blood test (FOBT)[6,11,12]. Studies conducted in Denmark showed that the follow-up of patients submitted to FOBT significantly reduced the risk of mortality caused by CRC[13,14]. A systematic review showed that FOBT reduced the relative risk of colorectal cancer by 16% and the relative risk of death caused by CRC by 15%[7].

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Selvachandran et al., in two studies, demonstrated that questionnaires based on signs and symptoms can be used as a CRC screening method. Questionnaires were used in certain populations and they observed that the patients with CRC diagnosis presented higher scores than the patients without this pathology[15,16].

In Brazil, the possibility of incrementing the detection of colorectal cancer lesions with a questionnaire based on signs, symptoms and history was raised after a pilot study that analyzed the results of colonoscopy in patients submitted to FOBT and questionnaires of positive and negative results. The study demonstrated that most screened patients with positive results at colonoscopy were already symptomatic and/or already presented alterations at FOBT[6].

Considering the increasing incidence of CRC in the country, the introduction of an effective questionnaire based on signs, symptoms and history in the medical practice would help in the disease prevention. Then, the purpose of this study was to verify the effectiveness of a clinical questionnaire (QSSA) in CRC prediction, acting as an instrument of screening precursors of this neoplasm.

METHODS

The population analyzed in this study was from a private clinic in Teresina (PI), between March and August 2010.

The study included patients that would be submitted to colonoscopy and excluded those that had already been submitted to colonoscopy before, under 50 years of age or with history of pelvic radiotherapy.

The patients signed an informed consent term before they start their participation in the study.

The sample was constituted of 40 patients, to which a questionnaire based on signs, symptoms and history (QSSA) of colorectal cancer precursors was applied[6] (Appendix 1). The QSSA was applied immediately before the previously scheduled colonoscopy procedure was performed, with the intention of sorting the patients into two groups: group I, comprised of the 20 first patients with positive results in the QSSA, and group II, comprised of the 20 first patients with negative results in the QSSA.

The QSSA was considered positive when the two following criteria were fulfilled:

1. With family history of the disease, i.e., presence of at least one first-degree family member with CRC or adenomas;
2. With symptoms:
   a) Specific symptoms – blood in stool and/or alteration to bowel habit, such as increased frequency, aspect change (fine stool) or loss of stool for more than three months (these two symptoms alone determined positive QSSA);
   b) Non-specific symptoms - abdominal pain in the hypogastrium, for more than three months, anemia without defined cause, weakness, rectal pain and sensation of incomplete evacuation (in cases of non-specific symptoms, the QSSA was considered positive when presenting association of at least two symptoms).

The colonoscopy procedures were performed by the same physician, with patients sedated with Midazolam at the dose of 1 to 5 mg. Olympus endoscopic equipment were used in the procedures. All exams reached the cecum.

The study defined positive colonoscopy as that with neoplasm or precursors of CRC; otherwise, it was considered as negative colonoscopy.

A descriptive and inferential analysis was performed through Fisher's exact test, using Biostat 5.0 software to help in the analysis. The value of $p<0.05$ was considered statistically significant. In addition, sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and questionnaire accuracy were calculated.

RESULTS

The study evaluated 17 (42.5%) male and 23 (57.5%) female patients. In group I, both genders presented the same number of patients. Group II had 13 female 7 male patients (Chart 1). Regarding their age, the overall mean age was 60±2 years, ranging from 50 to 90 years.

In total, 14 positive and 26 negative colonoscopies were obtained. Group I presented 9 positive and 11 negative colonoscopies; while group II presented 5 positive and 15 negative colonoscopies (p=0.20) (Table 1, Chart 2)

The questionnaire sensitivity was 64.2%, specificity 57.7%, PPV 45.0%, NPV 75.0% and accuracy was 60.0% (Table 2).

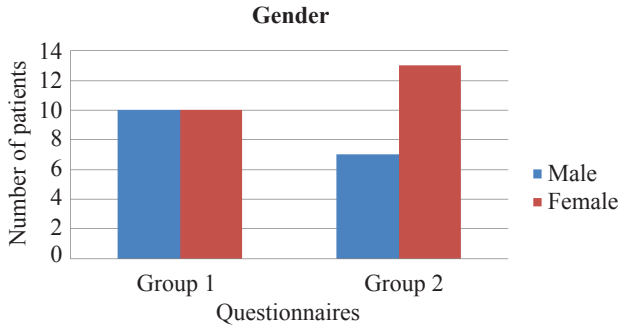

Chart 1. *Distribution of studied patients by gender.*

Table 1. *Distribution of findings by group.*

	Positive result in colonoscopy	Negative result in colonoscopy
Group I	9	11
Group II	5	15

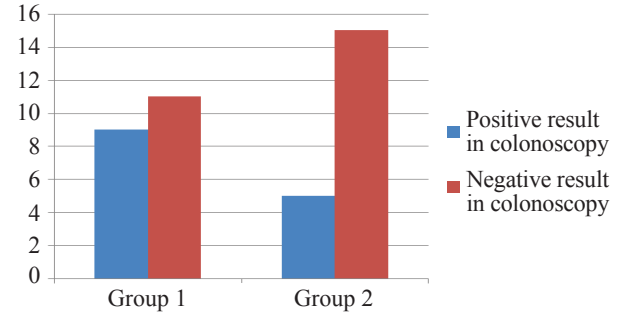

Chart 2. *Distribution of colonoscopic findings by group.*

DISCUSSION

CRC remains as an important cause of morbimortality worldwide[3,4]. In Brazil, the incidence has increased each year[5]. Then, special attention has been dedicated to exams that diagnose CRC and its precursors.

With improvements made in colonoscopy, this technique has appeared as the main method of colorectal evaluation, more effective than the radiological exam, also due to its therapeutic options[17]. However, this exam is inconvenient, invasive and costly. These characteristics encourage the search for other screening methods for such disease.

In Brazil, the best screening method would involve low cost, easy execution, high sensitivity and social acceptance[11,12]. As an exam that meets all these criteria is unavailable and based on the existing resources, some methods have been discussed, especially the fecal occult blood test (FOBT), which has shown to be a very attractive option, but without fulfilling all these requirements, and questionnaire based on signs and symptoms and history. This questionnaire, still not deeply studied, has shown to be effective when used with FOBT and has an educational character in terms of disclosing its most frequent signs, symptoms and history[6].

Patients under 50 years of age, who constitute a population with greater risk for developing this neoplasm, were excluded, in an attempt to have a more homogeneous sample. The same objective was intended when using the other exclusion criteria. In addition, no considerable predominance was observed between the genders.

Regarding the sample selection, the utilization of patients already with an indication to colonoscopy is a study bias, or possibly, a biased sample. However, this is the easiest and most economic way to conduct studies that require more invasive/or costly exams. In addition, it should be noted that many asymptomatic patients are submitted to colonoscopy as a primary

Table 2. *Percentages of sensitivity, specificity, positive predictive value, negative predictive value and accuracy.*

	Sensitivity	Specificity	PPV	NPV	Accuracy
QSSA +	64.2%	57.7%	45.0%	75.0%	60.0%

QSSA: questionnaire based on signs, symptoms and history; PPV: positive predictive value; NPV: negative predictive value.

prevention of CRC. Then, patients with negative results in the questionnaire were relatively frequent.

The statistical analysis did not show any significant difference in the findings when comparing the groups. It should be noted that most adenomas, for their reduced size, are asymptomatic, and then, not detectable or presumed using tests based on signs and symptoms. Only the family history can be detected using a questionnaire, and for this reason, the effectiveness of this strategy is questioned, especially when used alone in the prevention of CRC.

An effective screening test has to present high sensitivity, even with low specificity. In this study, median values of sensitivity were obtained. The same occurred with the other diagnostic tests. It shows that, when used alone, the QSSA is not an effective screening method. Similar values were found by Altenburg et al.[6].

Then, despite the fact of being an invasive and costly test, colonoscopy remains the method of choice for screening pre-neoplastic lesions, as the QSSA showed results of low significance when used alone to detect these lesions. However, the questionnaire should be further studied and improved to help identify individuals with substantial risk for CRC. In addition, it can be used by the physician as a source of information and a way to disseminate the risk factors to the population undergoing colonoscopy.

CONCLUSION

The use of a questionnaire based on signs, symptoms and history, when used alone, was not effective to screen neoplastic lesions.

RESUMO: Introdução: O câncer colorretal (CCR) é uma importante afecção caracterizada pela presença de tumores localizados no colón ou reto. A colonoscopia, padrão ouro na detecção do CCR, demanda alto custo. Assim, há necessidade de métodos de triagem eficazes, visando um melhor custo beneficio na diminuição da mortalidade do CCR. Objetivo: Avaliar a efetividade de um questionário de sinais, sintomas e antecedentes (QSSA) em predizer o CCR. Métodos: O QSSA foi aplicado a 40 pacientes, momentos antes da realização do exame colonoscópico, no intuito de compor dois grupos: grupo I formado pelos 20 primeiros que apresentassem o QSSA positivo, e grupo II formado pelos 20 primeiros com QSSA negativo. A colonoscopia positiva foi aquela com achado de neoplasia ou lesões precursoras do CCR. O resultado foi submetido à análise estatística através do Teste Exato de Fischer e do cálculo da sensibilidade, especificidade, acurácia e valores preditivos positivos e negativos. Resultado: Observaram-se 14 colonoscopias positivas e 26 colonoscopias negativas, assim distribuídas: grupo I, 9 positivas e 11 negativas; grupo II, 5 positivas e 15 negativas (p=0,20). O questionário apresentou sensibilidade de 64,2%. Conclusão: A utilização de um questionário de sinais, sintomas e antecedentes usado isoladamente não mostrou eficácia no rastreamento de lesões neoplásicas.

Palavras-chave: câncer colorretal; questionário; programas de rastreamento; diagnóstico; prevenção primária.

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Appendix 1. *Questionnaire based on signs, symptoms and history (QSSA)*

Provide your information below and answer the questions with (x) – front and back
Name: _____
Age: _____ Gender: _____
Address: _____
Telephone number: (_____) _____
Height: _____ Weight (approx.): _____

1 - Have you ever noticed blood in stool? ( ) yes ( ) no
If your answer is yes, answer the questions below; otherwise, go to question 2.
( ) Bright red
( ) Dark blood
( ) Blood in the middle of stool
( ) Blood on paper, apart from stool
( ) Blood mixed with and apart from stool
( ) I can't identify the type of bleeding

How often does bleeding occur?
( ) Every day ( ) Once a week
( ) Twice a week ( ) Once a month
( ) It has happened once or it rarely occurs

Bleeding started:
( ) One week ago or less
( ) One month ago
( ) Less than 3 months ago
( ) One year ago

Bleeding amount:
( ) Small amount
( ) Large amount

When bleeding occurs, do you feel anything in the anus? Itching, pain or increased volume (swelling or tumoration)?
( ) Yes ( ) No

2 - What's your usual intestinal habit like? (How often do you evacuate?).
( ) Daily ( ) Three times a week
( ) More than once a day ( ) Less than once a week
( ) Twice a week

Your bowel is usually:
( ) Constipated (hard stool)
( ) Diarrhea
( ) Alternates between diarrhea and constipation

Has your intestinal habit changed lately?
( ) Yes ( ) No

If your answer is yes, how has it changed? ANSWER ONLY IF IT HAS CHANGED.
( ) It's more frequent (I evacuate more often) ( ) Changed to diarrhea
( ) It's constipated ( ) I'm losing stool
( ) It's urgent ( ) Now I have fine stool

Appendix 1. *Continuation*

When did it change?
( ) More than 3 months ago ( ) Less than 3 months ago

3 - Do you see mucus (jelly-like substance) or pus in stool?
( ) Yes ( ) No
4 - Do you have frequent stomachache or abdominal discomfort?
( ) Yes ( ) No

If you feel abdominal pain, where is the pain exactly?
( ) In lower abdomen ( ) In upper abdomen

5 - Have you felt any pain, itching, burning or increase volume (tumoration) in the anus in the last months?
( ) Yes ( ) No

6 - Have you lost appetite in the last months? ( ) Yes ( ) No

7 - Have you been submitted to any blood test that showed anemia? ( ) Yes ( ) No

8 - Have you felt constant weakness (tiredness) in the last months? ( ) Yes ( ) No

9 - Do you have nauseas and/or vomiting? ( ) Yes ( ) No

10 - Have you even been submitted to exams such as colonoscopy? ( ) Yes ( ) No

11 - Have you ever had intestinal polyps? ( ) Yes ( ) No

12 - Regarding your close family members: parents, brothers/sister and grandparents:

Has any of them had cancer? ( ) Yes ( ) No

Where?
( ) Bowel ( ) Breast ( ) Stomach ( ) Ovary

Who had it?
( ) Parents ( ) Grandparents ( ) Brothers/Sisters ( ) Uncles/Aunts

13 - Do you:
( ) Smoke?
( ) Drink alcohol regularly?
( ) Eat fats and fried food very often?
( ) Eat greens and fruits very often?

14 - Have you ever had cancer? ( ) Yes ( ) No

Where?
( ) Prostate ( ) Breast ( ) Stomach ( ) Ovary ( ) Uterus