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Colorectal cancer: The importance of screening for early *diagnosis*

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Summary

Introduction: Colorectal cancer is one of the most frequent causes of morbidity and mortality worldwide, and its incidence is increasing in Latin America. It is the most common neoplasm of the gastrointestinal tract among men and women that is amenable to screening and intervention, highlighting the importance of early diagnosis. **Objective:** To review the screening methods employed and their results, as well as the obstacles to achieving the planned screening.
Methodology: An integrative review was conducted in the PubMed, SciELO, and LILACS databases, using the descriptors "Colorectal cancer", "colorectal cancer" AND "screening", "Colorectal cancer" AND "treatment", and "Colorectal cancer" AND "prognosis". Articles from 2019 to 2024, in Portuguese, Spanish, or English, were included. **Discussion:** Colorectal neoplasia is of great clinical relevance due to its incidence and possible complications. In this context, early screening becomes an effective tool for preventing the progression of polyps to malignant lesions that can lead to bleeding, anemia, weight loss, acute obstruction, and neoplasms. Therefore, the importance of performing screening according to the guidelines is reiterated so that possible interventions can be implemented to prevent prognoses that compromise the quality and life expectancy of affected patients.

Conclusion: Colonoscopy is not only a diagnostic tool, but also an interventional one, since it allows for polypectomy, preventing the possible progression of identified polyps into malignant lesions. Therefore, early screening should be disseminated and facilitated by public and private health departments in order to increase demand for and adherence to this screening method.
Keywords: Colorectal cancer, Screening, Early diagnosis,

Abstract

Colorectal cancer is one of the most frequent causes of morbidity and mortality worldwide, and its incidence is increasing in Latin America. It is the most common gastrointestinal tract neoplasm among men and women that is amenable to screening and intervention, highlighting the importance of early diagnosis. The objective was to review the screening methods used and their results, as well as the barriers to meeting the recommended screening guidelines. An integrative review was conducted using the PubMed, SciELO, and LILACS databases, employing the descriptors “Colorectal cancer”, “colorectal cancer” AND “screening”, “Colorectal cancer” AND “treatment”, and “Colorectal cancer” AND “prognosis”. Articles from 2019 to 2024 in Portuguese, Spanish, or English were included. Colorectal neoplasm is of great clinical relevance due to its incidence and

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potential complications. In this context, early screening becomes an effective tool to prevent the progression of polyps into malignant lesions, which may present with bleeding, anemia, weight loss, acute obstruction, and neoplasms. Thus, the importance of performing screening according to guideline recommendations is reinforced so that appropriate interventions can be carried out to prevent outcomes that compromise the quality and life expectancy of affected patients. Colonoscopy is not only a diagnostic method but also an interventional one, as it enables polypectomy, preventing the potential progression of identified polyps into malignant lesions. Therefore, early screening should be promoted and facilitated by public and private health sectors to increase awareness and adherence to screening methods.

Keywords: Colorectal cancer, Screening, Early diagnosis.

1. INTRODUCTION

Colorectal neoplasms are highly relevant because they are a frequent cause of mortality in world. [1] Contrary to the trend in developed countries, in Brazil the incidence of cancer Colorectal cancer (CRC) is on the rise, and its diagnosis most often occurs at later stages. advanced stages of the disease. In this context, the importance of early diagnosis is highlighted, since... WHO indicates that up to 70% of deaths are related to a lack of resources for prevention. Early diagnosis and treatment of the pathology. [2]

Colonoscopy is the primary diagnostic tool, considered the gold standard. Furthermore, It is also directly related to the decrease in incidence and mortality rate. reaffirming its usefulness and the importance of early implementation. [3] current guidelines suggest Screening should begin at age 45, regardless of any associated symptoms or history. family history, in addition to the fecal occult blood test, which should be used annually. ÿ

The pathology involved in colorectal neoplasms justifies the importance of screening. which form polyps and from these, different types of lesions develop, such as a sessile, serrated polyp considered a carcinogenic precursor that may subsequently become metastatic. In this context, the fecal occult blood test is justified because adenomas, lesions Sessile serrated cells and CRCs eliminate abnormal cells with detectable molecular markers and have a tendency to bleed, allowing detection based on stool samples.ÿ

From the same perspective, mortality and the characteristic symptomatology of colorectal cancer are presented as follows: anemia, justified by blood loss in the colon wall, intestinal obstruction, weight loss due to The end of metastases. This pathophysiological sequence occurs slowly and gradually in most cases. thus offering a window of opportunity for early detection and polypectomy with screening. Early diagnosis is anticipated because in its initial stages the disease can be completely asymptomatic. In parallel, treatment for this type of cancer, when identified in its early stages, is categorically... Effective and decisive, with a better overall prognosis and greater chances of cure. ÿ

The established Western lifestyle contributes to the overall increase in the number of cases. since one of the risk factors is associated with a diet low in fiber combined with a sedentary lifestyle.

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as well as increased consumption of alcoholic beverages and red meat. Another classic risk factor

The most prominent risk factors are smoking and being older. It's also worth noting the post-diagnosis survival rate.

is directly related

2. METHODOLOGY

This work consists of an integrative literature review. Starting with the selection

Regarding a topic of great relevance, the study followed these steps: selection of databases.

important academic and scientific criteria and selection of descriptors used to filter the data; definition

the inclusion and exclusion criteria for articles in the study, followed by the selection of articles that

These criteria were met; organization of the selected materials and, finally, presentation and analysis.

from the data obtained.

The selected databases were PubMed, SciELO, and LILACS. In PubMed, the descriptors

used were: “Colorectal cancer”, “colorectal cancer” AND “screening”, “Colorectal cancer”

And “treatment”, “Colorectal cancer” and “prognosis” being found, respectively, 32,633,

61,967 and 26,500 results. In SciELO, 96, 231 and 93 articles were found for the same terms.

descriptors, respectively. In Lilacs, 726, 961, and 331 studies were found. Firstly,

The aim was to define concepts and elucidate general topics regarding the impact of hormonal changes on

Polycystic ovary syndrome. Subsequently, the topic was analyzed, providing a

A deeper understanding of new therapeutic approaches.

For this purpose, articles published between 2019 and 2024, in Portuguese, were included.

Spanish and English. Only studies available in full and related to...

The following were selected based on the impact of early screening on improving prognosis. The following were excluded.

research with publication dates older than 5 years, available

exclusively in abstract form, published in journals with a low impact factor or with

inconclusive methodologies. Therefore, after conducting the thorough analysis described, it was

Ten references were selected, comprising cohort and case-control clinical trials, and reviews.

Systematic literature reviews and meta-analysis.

3. DISCUSSION

3.1 Etiology

The etiology of colorectal cancer (CRC) is multifactorial, as it involves genetic factors,

Environmental and behavioral factors. Most cases of colorectal cancer are sporadic, that is, they occur intermittently.

isolated, and may be of idiopathic origin or due to environmental factors that contribute to it.

The onset of the disease. However, about 5 to 10% of cases are associated with syndromes.

Hereditary conditions, such as Lynch syndrome and familial adenomatous polyposis.

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The development of colorectal cancer (CRC) mostly follows the adenoma-carcinoma sequence. in which benign adenomatous polyps, resulting from genetic alterations, develop over time. They transform into malignant lesions. This progression can take up to 10 years, which justifies the need. and the importance of screening aimed at detecting and removing these polyps.

In addition to the hereditary syndromes mentioned earlier, there is a genetic predisposition in Families with a history of colorectal cancer, even in the absence of known syndromes. For this reason, Individuals with first-degree relatives diagnosed before the age of 60 have a risk of two to two. three times more likely to develop colorectal cancer and should begin screening early.

Environmental and lifestyle factors also play an important role in the etiology of colorectal cancer. mainly in sporadic cases. Nutritional factors, such as fiber deficiency, a diet rich in Lipids, especially with high consumption of saturated fats from food. Ultra-processed foods have been associated with a higher risk of developing colorectal cancer. Dietary patterns contribute to changes in intestinal metabolism, increased local inflammation, and proliferation of carcinogenic compounds, favoring the process of carcinogenesis.

Obesity and a sedentary lifestyle are linked to a state of chronic inflammation. In subclinical cases, pro-inflammatory cytokines are released, which, in the long term, promote... Oxidative stress and alterations in the gut microbiota favor the emergence of mutations. genetic factors, consequently increasing the risk of colorectal cancer. In addition, insulin resistance and... Elevated levels of insulin-like growth factors (IGF-1) observed in individuals Obese individuals stimulate cell proliferation and inhibit apoptosis, mechanisms that favor... Carcinogenesis. Excess visceral adipose tissue contributes to hormonal changes, such as... Increased leptin and reduced adiponectin, both associated with the development of neoplasms.

Smoking and alcohol consumption are also significant risk factors for colorectal cancer. The various... carcinogenic substances present in tobacco, such as polycyclic aromatic hydrocarbons and nitrosamines induce DNA mutations and accelerate the progression of para-adenomas. Adenocarcinoma. Furthermore, smokers have a higher risk of recurrence of adenomatous polyps. after polypectomy, which reinforces the need for rigorous screening in this population. As for Alcoholism is associated with the metabolization of ethanol into acetaldehyde, a toxic and carcinogenic compound. which causes direct damage to DNA and promotes mutations. Chronic alcohol consumption also promotes Folate deficiency, which is essential for DNA synthesis and repair, increases the production of certain species. Reactive oxygen species, which intensifies oxidative stress. Evidence also suggests that... The combination of alcohol and tobacco exerts a synergistic effect, which increases the risk of colorectal cancer in... comparison with the isolated use of each substance.

3.2 The importance of early screening

Screening for colorectal cancer (CRC) is of utmost importance for the early identification of precancerous lesions.

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cancerous growths, such as adenomatous polyps, so that they can be removed before they transform into cancerous growths. Malignant tumors and cancerous lesions in their early stages have a better prognosis. (Given)

Given that colorectal cancer (CRC) is one of the most common tumors in the population, screening for it includes all individuals. Regardless of gender, symptoms, and genetic predisposition. People who have a higher risk of adulthood. Those with a predisposition to hereditary factors will begin screening even earlier.

In general, a patient at average risk, which represents the majority of the population, for colorectal cancer, that is, asymptomatic patients with a negative family history for CRC or Those who do not have other predisposing conditions should begin screening at age 45. Monitoring should be maintained until age 75, provided that life expectancy is 10 years or more. more.

In Brazil, screening is done annually with a test to detect occult blood in the... stool examination (FOBT), this test is one of the most widely used screening methods due to its low cost. operational, accessible in the public health service, as it is a non-invasive examination, consequently It has better patient acceptance. However, it has a limitation regarding its sensitivity. non-hemorrhagic polyps, which may present a false-positive result, and when the result is positive it indicates- If a colonoscopy is performed, that is, for diagnostic confirmation, an examination of colonoscopy.

Colonoscopy is the gold standard examination for diagnosing colorectal cancer, as it has high sensitivity. and specificity in diagnosis. It allows direct visualization of the entire length of the colon and rectum, in addition to It is possible to remove adenomatous polyps and perform biopsies of suspicious lesions in the same area. procedure. For patients at average risk, colonoscopy should be performed every 10 years, that is That is, the time it takes for a precursor lesion to become malignant.

3.3 Current treatment proposals

The management of colorectal cancer should be individualized, considering the stage of the disease, the patient's clinical condition, and available resources. The main approaches include:

1. Surgical treatment

a) Endoscopic resection of polyps and early lesions via colonoscopy.

b) Curative oncological surgery, with segmental resection of the colon or rectum and lymphadenectomy, indicated in localized or locally advanced cases.

c) Palliative surgery, in situations of obstruction, perforation or bleeding, aimed at controlling symptomatic and improves quality of life.

2. Adjuvant and neoadjuvant treatment

a) Adjuvant chemotherapy (e.g., regimens based on 5-fluorouracil and oxaliplatin) in High-risk stage II and stage III tumors.

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b) Neoadjuvant chemotherapy combined with radiotherapy in locally distributed rectal tumors advanced techniques, aimed at reducing tumor mass and enabling more advanced surgical resection. conservative.

3. Systemic and personalized therapies

a) Palliative chemotherapy in metastatic cases, aiming at disease control and prolonging treatment. of survival.

b) Targeted therapies (anti-VEGF, anti-EGFR) and immunotherapy (anti-PD-1), indicated in profiles specific molecules, expanding therapeutic options and clinical outcomes.

4. Palliative care and support

a) Pain control, nutritional support, management of complications (obstruction, bleeding, anemia).

b) Attention to quality of life, psychological support, and integration of the multidisciplinary team.

5. Prevention and health promotion

a) Adopting healthy lifestyle habits: a diet rich in fiber, reducing meat consumption. Red and processed foods, regular physical activity, abstinence from tobacco and consumption. moderate alcohol consumption.

b) Health education and public policies to expand access to and adherence to screening.

4. CONCLUSION

Colorectal cancer represents one of the major public health challenges due to its high incidence. incidence and impact on global morbidity and mortality, especially in Latin American countries, such as Brazil, where diagnoses are frequently made at advanced stages. The review showed that the Early screening, especially through colonoscopy, plays a fundamental role. not only in diagnosis, but also in therapeutic intervention, with the possibility of removal of polyps and prevention of progression to invasive carcinoma. Thus, expanding coverage, the Encouraging public participation and facilitating access to screening methods should be... priorities in both the public and private spheres, in order to reduce complications and improve the prognosis and increase patient survival.

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