



Colorectal Carcinoma: Review and Novelties in 2023

Carlos A. Cardenas^{1*}, Shabnam Abrishami²

Abstract

Colorectal Carcinoma (CRC) is a highly prevalent malignant neoplasm derived from the colon or rectum, representing a significant global public health issue with high morbidity and mortality rates. Despite advancements in early detection and treatment, the incidence and mortality rates of CRC remain alarmingly high. This review provides a detailed analysis of the latest trends, statistics, and updates on the diagnosis, treatment, and prevention of CRC, with a focus on cutting-edge scientific developments and breakthroughs occurring in 2023. We discuss innovative screening techniques, biomarkers, and targeted therapies, as well as the importance of early intervention through routine screening and lifestyle adjustments in reducing CRC incidence. Additionally, we highlight ongoing clinical trials investigating novel treatment and preventive strategies that offer great potential for improving CRC management and outcomes in the future. This review serves as an invaluable resource for healthcare professionals and researchers interested in remaining up to date on the current state of research and advancements in the field of CRC.

Keywords: Colorectal carcinoma; Malignant neoplasm; Biomarkers; Targeted therapies.

Introduction

Colorectal cancer is a multifactorial disease that arises from the accumulation of genetic and environmental factors. Although the incidence of CRC varies globally, it has been increasing in recent years, particularly among young adults [1]. CRC is responsible for over 1 million new cases and over half a million deaths annually worldwide. In the United States alone, it is the third most common type of cancer and the second most deadly. According to the latest statistics in 2023, Colorectal Cancer (CRC) continues to affect both sexes at similar rates, with men having a slightly higher incidence rate compared to women. In terms of age, people aged over 65 years are at the highest risk of developing CRC, with the incidence rate increasing with age. However, recent studies suggest that CRC incidence is rising among younger adults, particularly those aged between 20 and 49 years, especially in high-income countries [1]. Moreover, vulnerable populations, including those with a family history of CRC, certain genetic syndromes, and inflammatory bowel disease, have a higher risk of developing CRC. Efforts to reduce CRC incidence and mortality, such as early detection, screening, and lifestyle interventions, should focus on these high-risk groups to achieve the greatest impact. Various modifiable and nonmodifiable risk factors for developing CRC have

been identified, the most important being age, a family history of CRC, lifestyle factors, and diet.

Diagnosis

Early detection is crucial for better outcomes in the management of CRC, as more advanced-stage cancers have a poorer prognosis. While colonoscopy remains the gold standard for CRC screening and diagnosis, several other less invasive techniques have emerged in recent years that have shown promise. For example, Fecal Immunochemical Testing (FIT) is a widely available and non-invasive screening test used to detect the presence of blood in the stool, which may be an indication of CRC [2]. FIT has a high sensitivity and specificity for detecting CRC, making it a convenient option for large-scale screening programs. Fecal DNA testing, which detects mutations in stool DNA associated with CRC, has also shown promise as a screening tool. However, its sensitivity for detecting early-stage CRC remains a subject of debate and further validation is needed.

In addition to fecal tests, emerging serum biomarkers are being investigated for their potential use in CRC detection and diagnosis. For example, tumor-associated antigens, such as Carcinoembryonic Antigen (CEA), are currently used as a diagnostic and prognostic tool in CRC patients. However, their sensitivity and specificity are suboptimal for early-stage CRC and their overexpression can be seen in non-cancerous conditions as well, limiting their use as a screening tool. Other potential biomarkers, such as microRNAs and extracellular vesicles, are also being explored for their diagnostic and predictive value in CRC patients. These biomarkers³ have shown promise in distinguishing between early-stage CRC and healthy controls, and their detection in bodily fluids such as blood or urine offers the potential for a more convenient and noninvasive diagnostic test.

Therefore, the use of different screening techniques and novel biomarkers in the diagnosis of CRC could revolutionize early detection and improve patient outcomes. However, additional research is still needed to validate the clinical utility of these techniques and establish their cost-effectiveness in large-scale screening and diagnosis programs. Nevertheless, these advances offer hope for a future where CRC is detected earlier and managed more effectively, reducing morbidity and mortality, especially in high-risk populations.

Treatment

Surgery is the primary treatment for early-stage CRC, as it provides the best chance of cure and has been shown to improve overall survival rates. In addition to removing the tumor, lymph node sampling is also crucial as it determines the stage of cancer and helps guide subsequent treatment decisions. The type of surgery performed, either open or minimally invasive, depends on the location and extent of the tumor and the patient's overall health. For example, laparoscopic surgery has been shown to be as effective as open surgery and has the added benefits of fewer complications, less pain, and faster recovery times.

Chemotherapy and radiation therapy are often used in addition to surgery in advanced-stage or high-risk patients, to reduce the risk of cancer recurrence and improve overall survival rates. Several chemotherapy regimens have been developed for CRC, with the most used being FOLFOX (5-fluorouracil, leucovorin, and oxaliplatin) and

*Corresponding author: Carlos A. Cardenas, Department of Oncology, Foundation for Research and Sciences (FORESC), USA. E-mail: Karmed@live.com

Received: June 08, 2023; Manuscript No: COCR-23-104466 ; Editor

Assigned: June 10, 2023; PreQC Id: COCR-23-104466 (PQ);

Reviewed: June 17, 2023; QC No: COCR-23-104466 (Q); Revised:

June 18, 2023; Manuscript No: COCR-23-104466 (R); Published:

June 21, 2023; DOI: 10.4172/cocr.6(6).296

FOLFIRI (5-fluorouracil, leucovorin, and irinotecan) [3]. Radiation therapy, which uses high-energy X-rays to destroy cancer cells, is often used in combination with chemotherapy to improve its effectiveness. It is particularly helpful in reducing the local recurrence of rectal cancer.

In recent years, targeted therapies have become a valuable addition to the treatment of advanced-stage CRC. These therapies act on specific pathways and molecules involved in tumor growth and progression, thus reducing side effects, and improving efficacy. The use of monoclonal antibodies, such as bevacizumab and cetuximab, has shown significant benefits in some CRC patients, particularly those with metastatic disease. Small molecule inhibitors, such as regorafenib and trifluridine/tipiracil, have also been shown to be effective in treating advanced-stage CRC, improving overall survival rates and progression-free survival.

Further research is needed to evaluate the efficacy of these treatments and identify the best patients for them. Clinical trials are also being conducted to investigate promising newer treatment options, such as immunotherapy and gene therapy. Immunotherapy involves using the body's own immune system to attack cancer cells and has shown promise in treating other types of cancer, such as melanoma and lung cancer. Gene therapy aims to correct or replace specific genes involved in cancer development and progression and is currently being investigated in preclinical and early-phase clinical trials for CRC.

CRC treatment provides hope for improved outcomes for patients diagnosed with this disease. While surgery remains the cornerstone of treatment for early-stage CRC, adjuvant therapies such as chemotherapy and radiation therapy can be effective in reducing the risk of cancer recurrence and improving overall survival rates. Targeted therapies have revolutionized the treatment of advanced-stage CRC, with monoclonal antibodies and small molecule inhibitors providing significant benefits in some patients. Exciting developments in the field of immunotherapy and gene therapy offer hope for even more effective and personalized treatments in the future. It is important for patients with CRC to discuss these treatment options with their healthcare team to determine the most appropriate course of action for their individual case. Additionally, maintaining a healthy lifestyle with regular exercise and a balanced diet can play an important role in improving outcomes and reducing the risk of recurrence [2].

CRC can have a significant impact on a patient's emotional well-being and can lead to patient burnout [4]. The diagnosis and treatment of CRC can create a range of emotional challenges, including anxiety, depression, and fear stemming from the uncertainties of the disease, complications, and treatment. In fact, studies have found that the prevalence of depression among CRC patients is higher than that of the general population, with a significant reduction in quality of life and an adverse effect on treatment. The emotional and psychological impact of CRC can be so severe that it may lead to patient burnout, a state of mental, physical, and emotional exhaustion that can interfere with a patient's recovery and management of the disease. Thus, optimal CRC treatment requires a multifaceted approach that addresses the social and emotional factors of the patient in addition to the medical condition. In this regard, healthcare providers must be aware of the psychosocial needs of CRC patients and their families and offer timely and appropriate support, counseling, and psychotherapy to address mental health issues and prevent patient burnout. Integrating interventions that target both the physiological and psychological aspects of CRC treatment not only improve the patient's quality of life

but can also positively impact clinical outcomes.

Prevention

Colorectal Carcinoma (CRC) is a largely preventable malignancy through lifestyle modifications and early detection and treatment. Evidence has consistently shown that dietary interventions, such as increasing the intake of fruits, vegetables, and whole grains while reducing the consumption of red and processed meats, alcohol, and saturated fats, can significantly lower CRC risk. In 2023, recent studies have added to this consensus. For instance, a meta-analysis of 13 prospective cohort studies including over 750,000 participants confirmed that higher fiber intake was associated with a reduced risk of CRC, highlighting the potential of dietary interventions to prevent the disease. Moreover, regular physical activity, smoking cessation, and maintenance of a healthy weight have been found to lower CRC risk, further emphasizing the importance of healthy lifestyle choices. Early and frequent screening is also essential for vulnerable populations such as individuals with a family history of CRC or certain genetic mutations. In recent years, new developments have made these screening tools even more effective and convenient, such as using non-invasive stool tests for high-risk individuals or 3-D colonoscopies that improve adenoma detection rates. Medical professionals also recommend routine screening for all individuals with average risk, beginning at age 45 or earlier based on individual risk factors [2]. In summary, comprehensive medical advice that includes adopting a healthy diet, regular physical activity, and routine screening tailored to a patient's needs, can lower the incidence of CRC, and promote healthy longevity.

Conclusion

In conclusion, CRC continues to pose a considerable threat to global public health, with high rates of mortality and morbidity. However, new frontiers in diagnosis, treatment, and prevention strategies offer hope for improved outcomes for CRC patients. The emergence of novel screening techniques, biomarkers, and targeted therapies highlights the significant strides made in the field of CRC management in 2023 and holds immense promise for the future. Lifestyle modifications and early detection through routine screening remain the best course of action in reducing the incidence of CRC and achieving optimal outcomes. Furthermore, ongoing clinical trials investigating new innovative treatment options and preventive strategies underscore the critical need for continued investment in research and development, offering an encouraging outlook for the future of CRC management. Overall, continued advancements in CRC management, combined with patient education and advocacy, hold significant promise in the global fight against this deadly disease.

References

1. Siegel RL, Miller KD, Fedewa SA, Ahnen DJ, Meester RG, et al. (2017) Colorectal cancer statistics, 2017. *Cancer J Clin* 67: 177-193.
2. Wolf AM, Fontham ET, Church TR, Flowers CR, Guerra CE, et al. (2018) Colorectal cancer screening for average-risk adults: 2018 guideline update from the American Cancer Society. *Cancer J Clin* 68: 250-281.
3. TANIS PD, Vleugels JLA (2019) Colorectal cancer. *Lancet* 394: 1467-1480.
4. Cardenas C (2022) Extinguishing the unknown from Burnout. *Archivos Patologia* 3: 87-87.

Author Affiliations [Top](#)

¹Department of Oncology, Foundation for Research and Sciences (FORESC), USA.

²Department of Medicine, Islamic Azad University, Tehran, Iran.