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"THE RISING INCIDENCE OF COLORECTAL CANCER IN YOUNG ADULTS"

Student of Kokand University Andijan Branch
Field of Study: General Medicine.Group 24-07
Name:Ne'matova Gulnigor
Nematovagulnigor708@gmail.com

Abstract

Colorectal cancer (CRC) has traditionally been considered a disease affecting older adults. However, recent studies have shown a disturbing rise in CRC incidence among individuals under 50 years of age. This article explores the epidemiological trends, risk factors, clinical presentation, and the importance of early detection strategies in young adults. Additionally, it evaluates the role of genetic predispositions, lifestyle factors, and diagnostic challenges that contribute to late-stage discovery in younger populations.

Introduction

Colorectal cancer ranks among the most common cancers worldwide. Although the overall incidence has declined due to improved screening and prevention efforts in older populations, a paradoxical increase is observed in individuals younger than 50 years. This alarming trend has led to heightened interest in understanding its causes, implications, and how it can be addressed. CRC is the second leading cause of cancer-related deaths globally and represents a significant burden on healthcare systems. The trend of early-onset CRC suggests a shift in the traditional risk profile and challeges current screening protocols. Recent research suggests that lifestyle factors beginning in childhood and adolescence, such as poor dietary habits and lack of physical activity, may have a cumulative effect that contributes to early-onset CRC. Moreover, global

dietary shifts toward processed and fast foods have correlated with rising CRC rates in urbanizing regions.

Epidemiology and Statistics

According to the American Cancer Society, the incidence of colorectal cancer in adults under 50 has increased by 51% since the mid-1990s. In 2023 alone, it was estimated that over 19,000 new cases would be diagnosed in this age group in the U.S. The highest rise in incidence has been seen in rectal cancers, particularly in individuals aged 20–39. Globally, early-onset CRC has been reported in countries with both high and low Human Development Index scores, indicating that the increase transcends economic and geographic boundaries. Some studies predict that by 2030, colon cancer incidence in people aged 20-34 will increase by 90% and rectalcancerby124%. The incidence is notably rising among African American and Hispanic populations, suggesting potential disparities in healthcare access, genetic susceptibility, or environmental exposure. In addition, urban living and exposure to air pollutants and endocrine-disrupting chemicals are emergingas factors that may influence the disease's epidemiology.

Risk Factors in Young Adults

Risk factors include both non-modifiable and modifiable contributors. Genetic predispositions such as Lynch syndrome, familial adenomatous polyposis (FAP), and MUTYH-associated polyposis are major inherited contributors. On the modifiable side, high intake of processed and red meats, low dietary fiber, sedentary lifestyle, obesity, smoking, and excessive alcohol consumption are strongly linked. Recent research also points to early-life antibiotic exposure and dysbiosis (imbalance) of gut microbiota as emerging risk factors. Inflammatory bowel diseases (IBD), includingCrohn's disease and ulcerative colitis, significantly increase CRCi risk if untreated.

Psychological stress, irregular sleep patterns, and circadian rhythm disruption are being explored as potential contributors. Emerging data suggests that long-term exposure to

environmental toxins, including pesticides and industrial chemicals, may also increase risk. Low levels of vitamin D and chronic low-grade inflammation have also been associated with increased colorectal cancer susceptibility.

Clinical Presentation and Diagnosis

Young adults often present with rectal bleeding, changes in bowel habits, abdominal pain, unexplained weight loss, and anemia. Due to the general perception that CRC is rare in young individuals, symptoms are frequently misdiagnosed as hemorrhoids, IBS, or stress-related conditions. This leads to significant diagnostic delays, often until the disease has progressed to later stages. Advanced imaging, colonoscopy, and biopsy remain the gold standards for diagnosis, while stool-based tests and CT colonography may aid detection.

Artificial intelligence (AI) tools and machine learning algorithms are being integrated into screening programs to improve early detection, especially in low-resource settings. Blood-based biomarkers and genetic testing are also being developed as non-invasive diagnostic options.

Treatment Approaches

Standard treatments include surgical resection, chemotherapy, radiation therapy, and targeted biological agents like bevacizumab and cetuximab. Immunotherapy is increasingly being explored, particularly for tumors with microsatellite instability (MSI). Young patients often tolerate aggressive treatments better but also face challenges such as fertility preservation, psychosocial issues, and long-term side effects. Multidisciplinary care and survivorship planning are critical components of management in this demohraphic.Emerging therapies such as CAR-T cell therapy and cancer vaccines are currently under investigation. Research is also focusing on the gut microbiome's role in influencing response to chemotherapy and immunotherapy, potentially opening doors to microbiome-targeted adjunct treatments.

Prevention and Early Screening

In 2021, the U.S. Preventive Services Task Force (USPSTF) updated screening guidelines to begin at age 45 instead of 50. For those with familyhistory or genetic syndromes, screening should start even earlier. Non-invasive screening tools like FIT, multitarget stool DNA tests, and virtual colonoscopy offer additional options. Public awareness campaigns are crucial to dispel the myth that CRC only affects older people and to encourage young adults to seek medical attention for persistent gastrointestinalsymptoms.

School- and university-based awareness campaigns can help youngindividuals recognize early symptoms and seek timely care. Genetic counseling and routine surveillance of at-risk individuals may significantly reduce morbidity and mortality. Innovations such as at-home colon screening kits and digital health tools (e.g., symptom trackers) are enhancing outreach efforts.

Discussion and Future Directions

The increasing trend in early-onset CRC raises questions about environmental exposures, changes in microbiome composition, and shifts in dietary and lifestyle patterns. Future research must investigate the biological differences in tumors in younger vs. older patients to tailor treatments moreeffectively. There is also a pressing need for healthcare policy updates to ensure coverage and access to screening for younger individuals. Advances in genomics and personalized medicine may offer new avenues for prevention and treatment.

Policymakers and healthcare institutions must collaborate to ensure that updated guidelines are equitably implemented. Further studies on the molecular biology of early-onset tumors are essential to distinguish them from later-onset CRC, potentially leading to novel therapeutic targets.

Conclusion

Colorectal cancer in young adults is a growing public health concern that requires urgent attention. Understanding its unique risk factors, promoting early detection, and

ensuring equitable access to care are key to improving survival rates. As the burden continues to rise, a combination of education, research, and policy reform is necessary to reverse the trend and improvelong-term outcomes. Collaboration across public health, education, research, and clinical practice is vital to curb the rising incidence of colorectal cancer in young adults. A comprehensive strategy that combines early education, prevention, cutting-edge diagnostics, and patient-centered care holds promise for reversing current trends.

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