

Young-Onset Colon Cancer: A Case Report

Syed Salman Hamid Hashmi¹, Ahmed Shady², Jean Atallah-Vinograd², Donelle Cummings³, Ashley Maranino², Jennifer Harley²

Review began 09/14/2022

Review ended 09/20/2022

Published 09/27/2022

© Copyright 2022

Hashmi et al. This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

1. Internal Medicine, NYU (New York University) Langone, Woodhull Medical Center, New York City, USA 2. Gastroenterology, New York Medical College, Metropolitan Hospital Center, New York City, USA 3. Advanced Endoscopy/Gastroenterology, New York Medical College, Metropolitan Hospital Center, New York City, USA

Corresponding author: Syed Salman Hamid Hashmi, hashmis3@nychhc.org

Abstract

Colorectal cancer (CRC) which is diagnosed in patients under the age of 50 years is defined as young-onset CRC. There has been a substantial increase in the incidence and mortality of young-onset CRC in the past four decades and the patients have delayed diagnoses leading to the advanced stages of CRC at the time of diagnosis. Here we present a case of a 34-year-old male patient with colon cancer and a literature review on young-onset colon cancer to highlight the age-related disparities in CRC incidence and try to explore the possible causative factors for the rise in incidence and mortality in young patients due to CRC.

Categories: Gastroenterology, Public Health

Keywords: young colon cancer awareness, hispanic health, african american colon cancer, screening colonoscopy, young colon cancer

Introduction

Colorectal cancer (CRC) which is diagnosed in patients under the age of 50 years is defined as young-onset CRC [1]. There has been a substantial increase in the incidence and mortality of young-onset CRC in the past four decades and the patients typically have delayed diagnoses due to under-screening of patients under the age of 45 years leading to advanced stages of CRC at the time of diagnosis [1-3]. The annual incidence of young-onset CRC has increased by 2-8% over the past two decades in the United States [1,2]. A total of 21.2% of patients diagnosed with CRC are below the age of 55 and it is a leading cause of death between the age group of 20-49 years [1,2]. Apart from a delay in diagnosis, there may be multifactorial genetic and environmental risk factors that have led to an increased incidence of CRC [3-5]. We present a case of a 34-year-old male patient with colon cancer who initially presented to the hospital with anemia. We illustrated the age-related disparities in CRC incidence and tried to explore the possible causative factors for the rise in incidence and mortality in young patients due to CRC through a literature review. A literature review was conducted using the PubMed database that included prospective trials, meta-analyses, and systematic reviews for the last 10 years from January 2012 through March 18, 2022; a total of 40 titles underwent full-length article assessment.

Case Presentation

A 34-year-old Ecuadorian male with no past medical or surgical history was referred by his primary care physician for low hemoglobin of 3.1 g/dL. The patient did not have a history of gastrointestinal bleeding, alcohol consumption, or smoking. The patient immigrated to the United States from Ecuador one year prior to his presentation and complained of fatigue, headache, lightheadedness, and early satiety for eight months. The patient was admitted to the hospital for symptomatic anemia evaluation and he received three units of blood transfusion after which his hemoglobin normalized. There was no family history of gastrointestinal malignancies. Anemia workup revealed iron deficiency anemia. A CT abdomen and the pelvis showed a 9 cm circumferential wall thickening of the proximal ascending colon with prominent lymph nodes in the abdomen (Figure 1). CT chest and a CT triple phase of the liver ruled out metastasis.

How to cite this article

Hashmi S, Shady A, Atallah-Vinograd J, et al. (September 27, 2022) Young-Onset Colon Cancer: A Case Report. Cureus 14(9): e29667. DOI 10.7759/cureus.29667

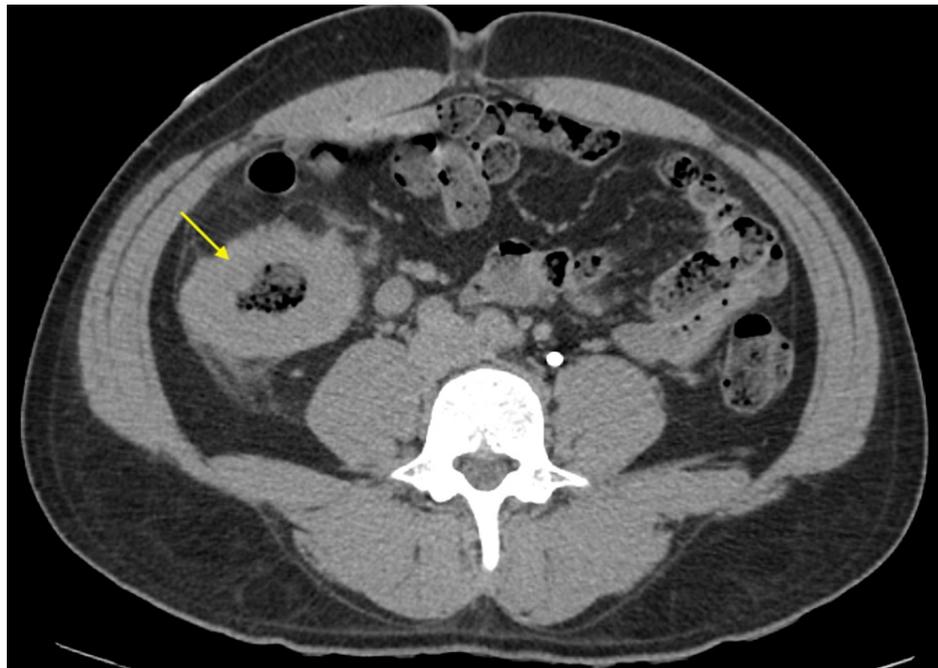


FIGURE 1: CT abdomen and pelvis with contrast shows a circumferential wall thickening of the proximal ascending colon with prominent lymph nodes (arrow).

Carcinoembryonic antigen (CEA) level was 6.1 ng/mL (reference range: 0-2.5 ng/mL). The patient received a colonoscopy which revealed a 30 mm ulcerated, circumferential mass extending from the ileocecal valve to the hepatic flexure (Figure 2). The colonoscopy also revealed a 20 mm polyp which was found at the hepatic flexure that was removed by polypectomy (Figure 3), and a 20 mm polyp in the descending colon (Figure 4) that was removed by endoscopic mucosal resection (EMR) (Figure 5).

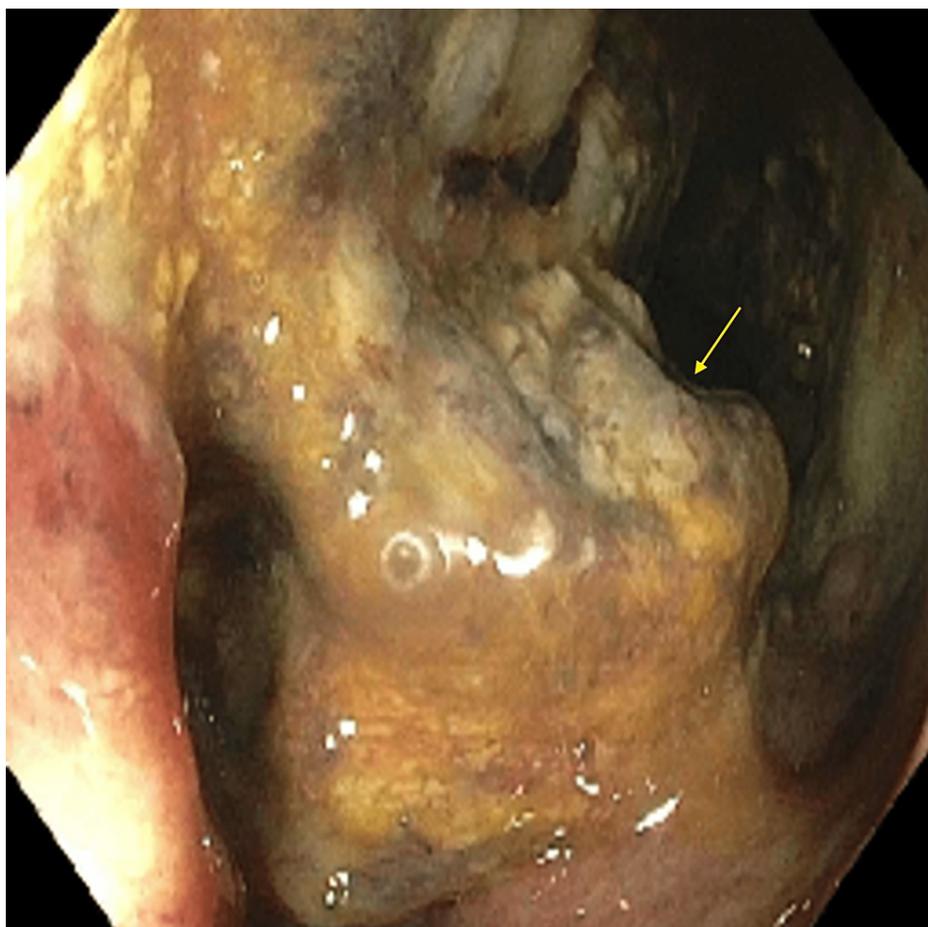


FIGURE 2: Colonoscopy image shows a 30 mm ulcerated, circumferential mass extending from the ileocecal valve to the hepatic flexure.

The arrow shows the mass partially blocking the lumen.

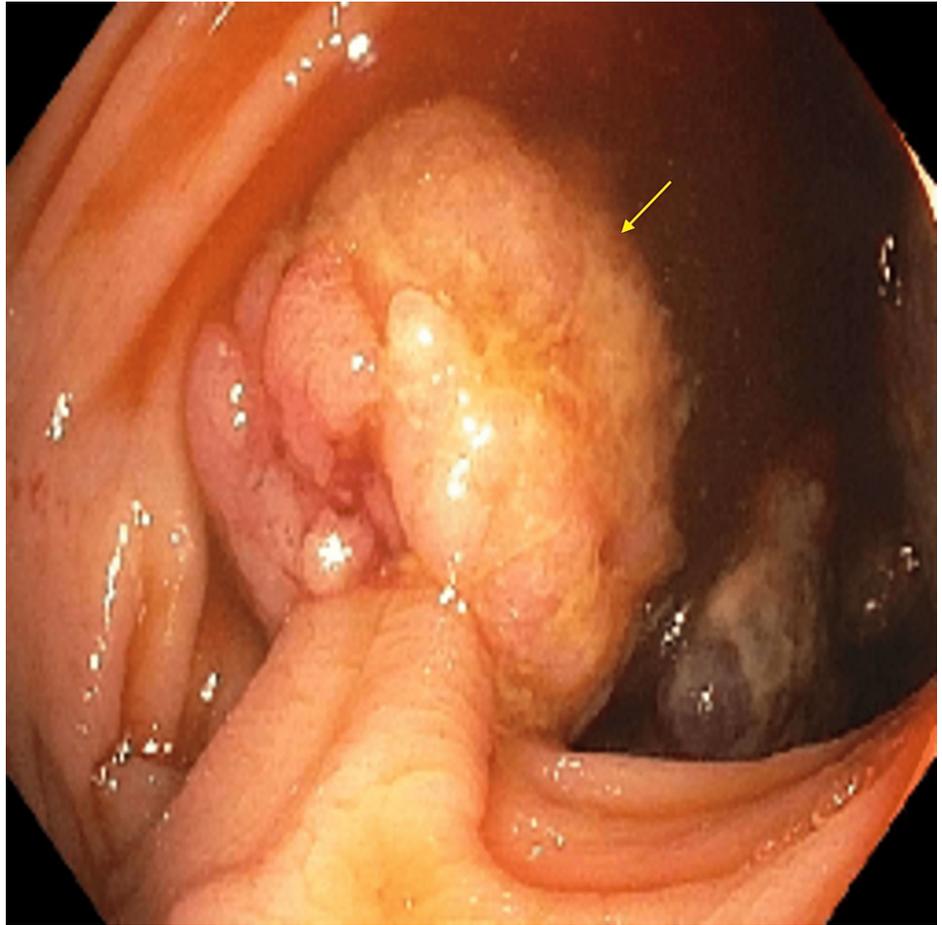


FIGURE 3: Colonoscopy image shows a 20 mm polyp (arrow) at the hepatic flexure.

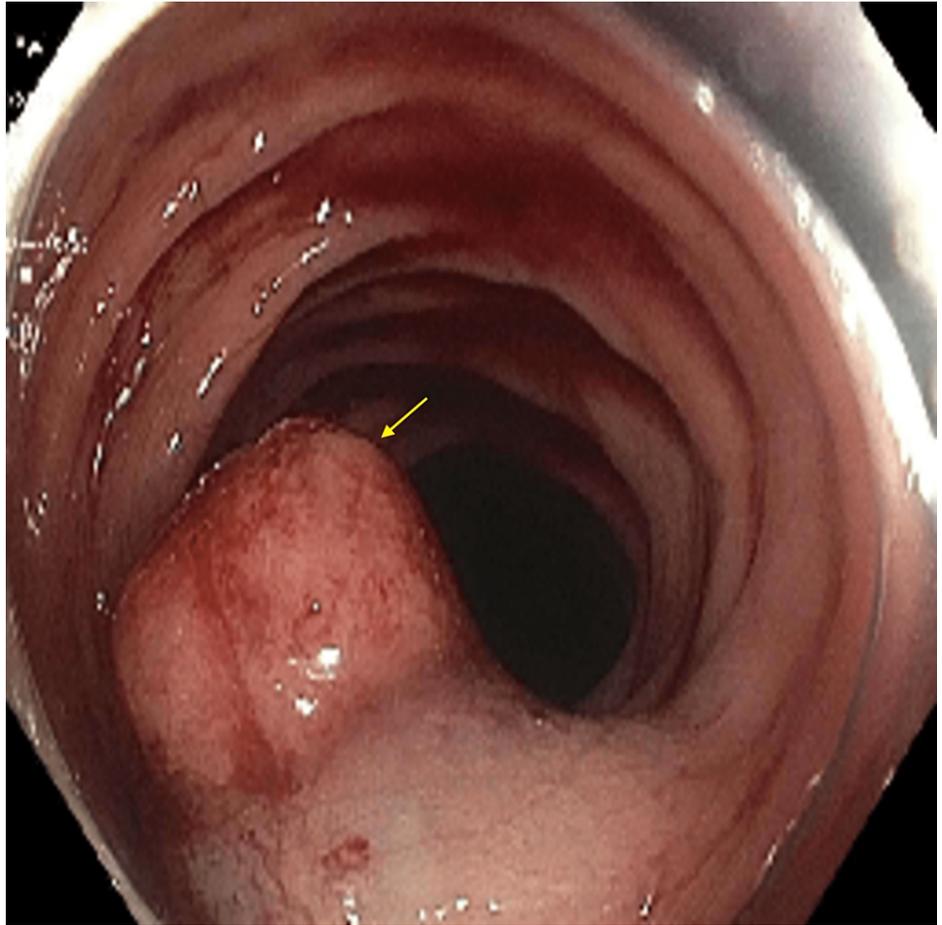


FIGURE 4: Colonoscopy image shows a 20 mm polyp (arrow) in the descending colon.

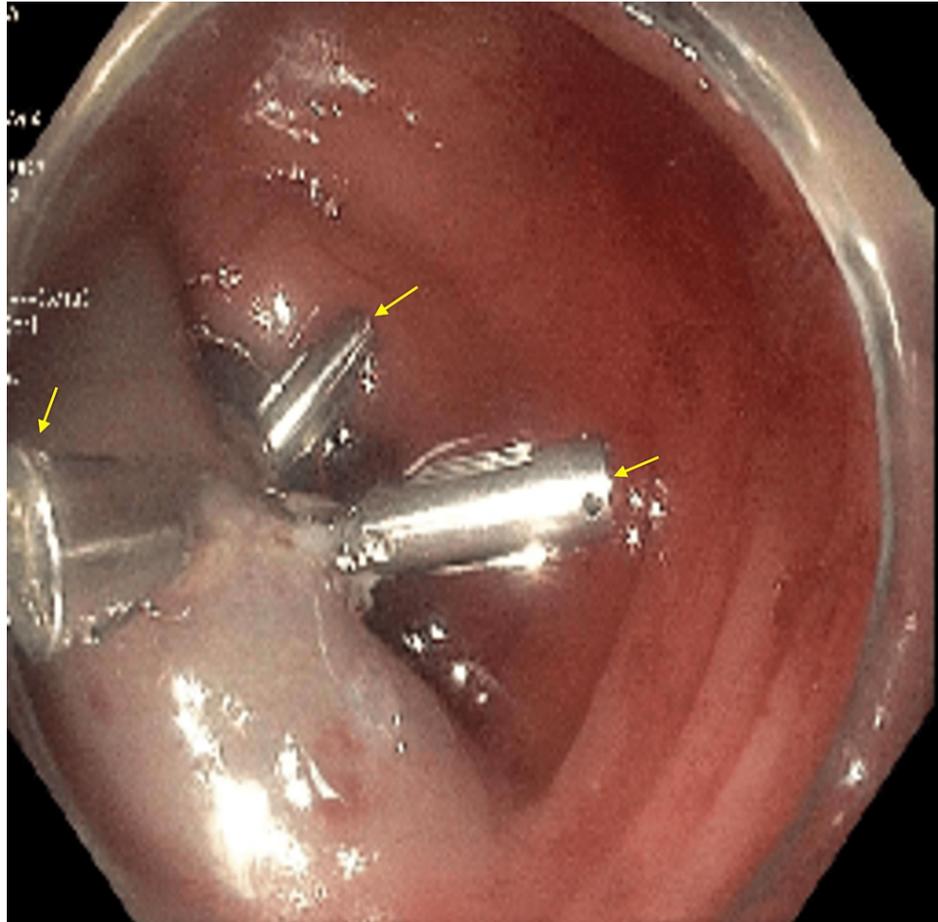


FIGURE 5: Colonoscopy image shows the descending colon polyp removal by endoscopic mucosal resection.

The arrows show the endoclips which were applied for hemostasis.

Histopathology of the circumferential mass showed invasive poorly differentiated adenocarcinoma and the histopathology of the hepatic flexure polyp, and descending colon polyp showed tubulovillous adenoma and tubular adenoma. The patient underwent a right hemicolectomy and was started on chemotherapy as recommended by oncology. CEA levels normalized six months post-chemotherapy and a CT abdomen and pelvis showed no metastasis.

Discussion

Routine screening colonoscopies have considerably decreased the overall incidence and mortality of CRC in the last few decades. But for patients under the age of 50 years, the incidence rate of CRC has increased in the past three decades [1,6]. The Surveillance, Epidemiology, and End Results (SEER) data from 1984 to 2020 showed that in the United States among those under the age of 50 years, there was a 2.6% annual increase in the incidence rate of CRC, with the greatest increase in CRC incidence rates seen among patients between ages of 20 and 34 years [1,7]. In the United States, young-onset CRC is the second leading cause of cancer among males and the fourth leading cause of cancer among females [1,8]. There are substantial racial and ethnic differences in CRC incidence in the United States [1,9]. The New York Cancer Registry showed an incidence of 29% of South Asians and 26% of Southeast Asians were under age 50 at diagnosis, compared to 14% of non-Hispanic whites. Non-Hispanic Black Americans are disproportionately diagnosed with a greater prevalence of CRC at later stages of the disease and have poorer overall survival rates [10-12]. A family history of colon cancer is the strongest known risk factor for CRC and close to 23-39% of young-onset CRC patients have a family history of CRC [13-16]. Inflammatory bowel disease (IBD) is also a risk factor for CRC and is associated with mucinous or signet ring histology [15].

CRC is often asymptomatic but may present with red-flag symptoms such as unexplained anemia, and rectal bleeding. Young-onset CRC patients predominantly present with hematochezia, change in bowel habits, abdominal pain, anemia, and weight loss [1,17-24]. Precursor adenomatous lesions are less likely to have associated young-onset CRCs [24]. They generally occur distal to the splenic flexure or the rectum [25,26].

Literature review shows a seven-week to a two-year delay in diagnosis of young-onset colon cancer probably due to a low level of suspicion for CRC when the patient presents with symptoms. Young-onset CRC also tends to be diagnosed at later stages with metastatic disease. The increase in young-onset CRC is attributed to behavioral, lifestyle, and environmental factors that influence disease risk [1,18,19,9-16]. Heavy alcohol consumption, obesity, diabetes, and lack of physical activity are associated with an increased risk of CRC [27-42]. The American Cancer Society (ACS) and US Preventive Services Task Force (USPSTF) recently modified the guidelines for screening colonoscopies to include the age between 45 and 49 years. These recommendations for screening below the age of 50 years are based on modeling studies evaluating young adults receiving colonoscopies because of symptoms and family history. Aggressive histologic characteristics are frequently seen in young-onset CRC [37].

Conclusions

The case report and the literature review highlight the importance of being vigilant of CRC symptoms even in the young population, especially when they have risk factors for CRC. The article also emphasizes the age-related and racial disparity in CRC distribution. It also identifies a need to increase the awareness of young-onset CRC among clinicians and patients, especially in the minority communities like the African American and Hispanic communities.

Additional Information

Disclosures

Human subjects: Consent was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

References

1. Done JZ, Fang SH: Young-onset colorectal cancer: a review. *World J Gastrointest Oncol.* 2021, 13:856-66. [10.4251/wjgo.v13.i8.856](https://doi.org/10.4251/wjgo.v13.i8.856)
2. Yusuf M, Paterasari B: Colorectal cancer in young adults: two case reports. *Bali Med J.* 2019, 8:10.15562/bmj.v8i3.1551
3. Kim NH, Jung YS, Yang HJ, Park SK, Park JH, Park DI, Sohn CI: Prevalence of and risk factors for colorectal neoplasia in asymptomatic young adults (20-39 years old). *Clin Gastroenterol Hepatol.* 2019, 17:115-22. [10.1016/j.cgh.2018.07.011](https://doi.org/10.1016/j.cgh.2018.07.011)
4. Troeung L, Sodhi-Berry N, Martini A, et al.: Increasing incidence of colorectal cancer in adolescents and young adults aged 15-39 years in Western Australia 1982-2007: examination of colonoscopy history. *Front Public Health.* 2017, 5:10.3389/fpubh.2017.00179
5. Campos FG: Colorectal cancer in young adults: a difficult challenge. *World J Gastroenterol.* 2017, 23:5041-4. [10.3748/wjg.v23.i28.5041](https://doi.org/10.3748/wjg.v23.i28.5041)
6. Ulanja MB, Beutler BD, Rishi M, Ogala C, Patterson DR, Gullapalli N, Ambika S: Colorectal cancer presentation and survival in young individuals: a retrospective cohort study. *Cancers (Basel).* 2018, 10:10.3390/cancers10120472
7. Rebelatto TF, Bento LH, Salla RF, et al.: Colorectal cancer in young patients: a case report. *Clin Biomed Res.* 2016, 36:110-3. [10.4322/2357-9730.60684](https://doi.org/10.4322/2357-9730.60684)
8. Murphy CC, Lund JL, Sandler RS: Young-onset colorectal cancer: earlier diagnoses or increasing disease burden?. *Gastroenterology.* 2017, 152:1809-12. [10.1053/j.gastro.2017.04.030](https://doi.org/10.1053/j.gastro.2017.04.030)
9. Murphy CC, Singal AG, Baron JA, Sandler RS: Decrease in incidence of young-onset colorectal cancer before recent increase. *Gastroenterology.* 2018, 155:1716-9. [10.1053/j.gastro.2018.07.045](https://doi.org/10.1053/j.gastro.2018.07.045)
10. Bhandari A, Woodhouse M, Gupta S: Colorectal cancer is a leading cause of cancer incidence and mortality among adults younger than 50 years in the USA: a SEER-based analysis with comparison to other young-onset cancers. *J Investig Med.* 2017, 65:311-5. [10.1136/jim-2016-000229](https://doi.org/10.1136/jim-2016-000229)
11. Rahman R, Schmaltz C, Jackson CS, Simoes EJ, Jackson-Thompson J, Ibdah JA: Increased risk for colorectal cancer under age 50 in racial and ethnic minorities living in the United States. *Cancer Med.* 2015, 4:1863-70. [10.1002/cam4.560](https://doi.org/10.1002/cam4.560)
12. Wallace K, DeToma A, Lewin DN, et al.: Racial differences in stage IV colorectal cancer survival in younger and older patients. *Clin Colorectal Cancer.* 2017, 16:178-86. [10.1016/j.clcc.2016.11.006](https://doi.org/10.1016/j.clcc.2016.11.006)
13. Holowatyj AN, Ruterbusch JJ, Rozek LS, Cote ML, Stoffel EM: Racial/ethnic disparities in survival among patients with young-onset colorectal cancer. *J Clin Oncol.* 2016, 34:2148-56. [10.1200/JCO.2015.65.0994](https://doi.org/10.1200/JCO.2015.65.0994)
14. Ellis L, Abrahão R, McKinley M, et al.: Colorectal cancer incidence trends by age, stage, and racial/ethnic group in California, 1990-2014. *Cancer Epidemiol Biomarkers Prev.* 2018, 27:1011-8. [10.1158/1055-9965.EPI-18-0030](https://doi.org/10.1158/1055-9965.EPI-18-0030)
15. O'Connell JB, Maggard MA, Livingston EH, Yo CK: Colorectal cancer in the young. *Am J Surg.* 2004, 187:343-8. [10.1016/j.amjsurg.2003.12.020](https://doi.org/10.1016/j.amjsurg.2003.12.020)
16. Chen FW, Sundaram V, Chew TA, Ladabaum U: Low prevalence of criteria for early screening in young-onset colorectal cancer. *Am J Prev Med.* 2017, 53:933-4. [10.1016/j.amepre.2017.07.016](https://doi.org/10.1016/j.amepre.2017.07.016)
17. Chen FW, Sundaram V, Chew TA, Ladabaum U: Advanced-stage colorectal cancer in persons younger than 50 years not associated with longer duration of symptoms or time to diagnosis. *Clin Gastroenterol Hepatol.*

- 2017, 15:728-37. [10.1016/j.cgh.2016.10.038](https://doi.org/10.1016/j.cgh.2016.10.038)
18. Lowery JT, Ahnen DJ, Schroy PC 3rd, et al.: Understanding the contribution of family history to colorectal cancer risk and its clinical implications: a state-of-the-science review. *Cancer*. 2016, 122:2633-45. [10.1002/cncr.30080](https://doi.org/10.1002/cncr.30080)
 19. Glover M, Mansoor E, Panhwar M, Parasa S, Cooper GS: Epidemiology of colorectal cancer in average risk adults 20-39 years of age: a population-based national study. *Dig Dis Sci*. 2019, 64:3602-9. [10.1007/s10620-019-05690-8](https://doi.org/10.1007/s10620-019-05690-8)
 20. Triantafyllidis JK, Nasioulas G, Kosmidis PA: Colorectal cancer and inflammatory bowel disease: epidemiology, risk factors, mechanisms of carcinogenesis and prevention strategies. *Anticancer Res*. 2009, 29:2727-37.
 21. Baars JE, Kuipers EJ, van Haastert M, Nicolai JJ, Poen AC, van der Woude CJ: Age at diagnosis of inflammatory bowel disease influences early development of colorectal cancer in inflammatory bowel disease patients: a nationwide, long-term survey. *J Gastroenterol*. 2012, 47:1308-22. [10.1007/s00535-012-0603-2](https://doi.org/10.1007/s00535-012-0603-2)
 22. Willauer AN, Liu Y, Pereira AA, et al.: Clinical and molecular characterization of early-onset colorectal cancer. *Cancer*. 2019, 125:2002-10. [10.1002/cncr.31994](https://doi.org/10.1002/cncr.31994)
 23. Hill DA, Furman WL, Billups CA, et al.: Colorectal carcinoma in childhood and adolescence: a clinicopathologic review. *J Clin Oncol*. 2007, 25:5808-14. [10.1200/JCO.2007.12.6102](https://doi.org/10.1200/JCO.2007.12.6102)
 24. Patel K, Doulias T, Hoad T, Lee C, Alberts JC: Primary-to-secondary care referral experience of suspected colorectal malignancy in young adults. *Ann R Coll Surg Engl*. 2016, 98:308-13. [10.1308/rcsann.2016.0123](https://doi.org/10.1308/rcsann.2016.0123)
 25. Myers EA, Feingold DL, Forde KA, Arnell T, Jang JH, Whelan RL: Colorectal cancer in patients under 50 years of age: a retrospective analysis of two institutions' experience. *World J Gastroenterol*. 2013, 19:5651-7. [10.3748/wjg.v19.i34.5651](https://doi.org/10.3748/wjg.v19.i34.5651)
 26. Kneuert PJ, Chang GJ, Hu CY, et al.: Overtreatment of young adults with colon cancer: more intense treatments with unmatched survival gains. *JAMA Surg*. 2015, 150:402-9. [10.1001/jamasurg.2014.3572](https://doi.org/10.1001/jamasurg.2014.3572)
 27. Siddique S, Tariq K, Rafiq S, Raheem A, Ahmed R, Shabbir-Moosajee M, Ghias K: Sporadic early onset colorectal cancer in Pakistan: a case-control analysis of microsatellite instability. *Asian Pac J Cancer Prev*. 2016, 17:2587-92.
 28. Benson AB, Venook AP, Al-Hawary MM, et al.: NCCN guidelines insights: rectal cancer, version. *J Natl Compr Canc Netw*. 2020, 18:806-15. [10.6004/jnccn.2020.0032](https://doi.org/10.6004/jnccn.2020.0032)
 29. Ballester V, Rashtak S, Boardman L: Clinical and molecular features of young-onset colorectal cancer. *World J Gastroenterol*. 2016, 22:1736-44. [10.3748/wjg.v22.i5.1736](https://doi.org/10.3748/wjg.v22.i5.1736)
 30. Abdelsattar ZM, Wong SL, Regenbogen SE, Jomaa DM, Hardiman KM, Hendren S: Colorectal cancer outcomes and treatment patterns in patients too young for average-risk screening. *Cancer*. 2016, 122:929-34. [10.1002/cncr.29716](https://doi.org/10.1002/cncr.29716)
 31. Schellerer VS, Merkel S, Schumann SC, et al.: Despite aggressive histopathology, survival is not impaired in young patients with colorectal cancer: CRC in patients under 50 years of age. *Int J Colorectal Dis*. 2012, 27:71-9. [10.1007/s00584-011-1291-8](https://doi.org/10.1007/s00584-011-1291-8)
 32. Dozois EJ, Boardman LA, Suwanthanma W, et al.: Young-onset colorectal cancer in patients with no known genetic predisposition: can we increase early recognition and improve outcome?. *Medicine (Baltimore)*. 2008, 87:259-63. [10.1097/MD.0b013e3181881354](https://doi.org/10.1097/MD.0b013e3181881354)
 33. Rex DK, Boland CR, Dominitz JA, et al.: Colorectal cancer screening: recommendations for physicians and patients from the U.S. Multi-Society Task Force on Colorectal Cancer. *Gastroenterology*. 2017, 153:307-23. [10.1053/j.gastro.2017.05.013](https://doi.org/10.1053/j.gastro.2017.05.013)
 34. Gado A, Ebeid B, Abdelmohsen A, Axon A: Colorectal cancer in Egypt is commoner in young people: is this cause for alarm?. *Alexandria J Med*. 2014, 50:197-201. [10.1016/j.ajme.2013.03.003](https://doi.org/10.1016/j.ajme.2013.03.003)
 35. Ahn CH, Kim SC: Two case reports: colorectal adenocarcinoma in children. *Medicine (Baltimore)*. 2017, 96:[10.1097/MD.0000000000008074](https://doi.org/10.1097/MD.0000000000008074)
 36. Arnold D, Lueza B, Douillard JY, et al.: Prognostic and predictive value of primary tumour side in patients with RAS wild-type metastatic colorectal cancer treated with chemotherapy and EGFR directed antibodies in six randomized trials. *Ann Oncol*. 2017, 28:1713-29. [10.1093/annonc/mdx175](https://doi.org/10.1093/annonc/mdx175)
 37. Petrelli F, Tomasello G, Borgonovo K, et al.: Prognostic survival associated with left-sided vs right-sided colon cancer: a systematic review and meta-analysis. *JAMA Oncol*. 2017, 3:211-9. [10.1001/jamaoncol.2016.4227](https://doi.org/10.1001/jamaoncol.2016.4227)
 38. Kim TJ, Kim ER, Hong SN, Chang DK, Kim YH: Long-term outcome and prognostic factors of sporadic colorectal cancer in young patients: a large institutional-based retrospective study. *Medicine (Baltimore)*. 2016, 95:[10.1097/MD.0000000000003641](https://doi.org/10.1097/MD.0000000000003641)
 39. Wolf AM, Fontham ET, Church TR, et al.: Colorectal cancer screening for average-risk adults: 2018 guideline update from the American Cancer Society. *CA Cancer J Clin*. 2018, 68:250-81. [10.3322/caac.21457](https://doi.org/10.3322/caac.21457)
 40. Fang SH, Efron JE, Berho ME, Wexner SD: Dilemma of stage II colon cancer and decision making for adjuvant chemotherapy. *J Am Coll Surg*. 2014, 219:1056-69. [10.1016/j.jamcollsurg.2014.09.010](https://doi.org/10.1016/j.jamcollsurg.2014.09.010)
 41. Murphy CC: Colorectal cancer in the young: does screening make sense?. *Curr Gastroenterol Rep*. 2019, 21:[10.1007/s11894-019-0695-4](https://doi.org/10.1007/s11894-019-0695-4)
 42. Colon cancer version 2.2017. (2017). Accessed: February 20, 2021: <https://www2.trike.org/nccn/guideline/colorectal/english/colon.pdf>.