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Patterns and outcomes of colorectal cancer in adolescents and young adults



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ARTICLE INFO

Article history:

Received 24 March 2016

Received in revised form

3 May 2016

Accepted 18 May 2016

Available online 26 May 2016

Keywords:

Colon cancer

Young adults

Adolescents

AYA

Rectal cancer

ABSTRACT

Background: The incidence of colorectal cancer (CRC) in the adolescent and young adult (AYA) population (aged 15–39 y) is rising.

Materials and methods: We used the Surveillance, Epidemiology, and End Results Database to study CRC in the AYA population. We studied clinical and socioeconomic factors associated with survival.

Results: Of the 11,071 cases of CRC, the most common site of the primary tumor was the rectum (25%), whereas 66.6% of the diseases were left sided. Most of the patients (72%) presented with regional or metastatic disease. However, the disease-specific survival (DSS) and the overall survival of the AYA population were comparable to those of the general population (DSS; 5- and 10-y: 64.8%, 57.3%; overall survival; 5- and 10-y: 61.5% and 52.4%). On multivariate analysis, disease stage at the time of the diagnosis was the strongest predictor of mortality. After controlling for disease stage, male gender, black race, and higher grade tumors were associated with worse survival.

Conclusions: The AYA population presents with advanced distal CRC but have similar survival compared with the general population.

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Introduction

Colorectal cancer (CRC) is the third most common cancer among both men and women.¹ Whereas the incidence of CRC has been decreasing in the general population due to the implementation of screening measures, there has been a significant increase in the incidence of CRC in adolescents and young adults (AYA: aged 15–39 y), although the absolute number remains low.^{2–4} Proposed etiologies include the absence of screening guidelines, diet, exercise, and other

environmental factors.⁵ Currently, the US Preventive Services Task Force does not recommend that screening colonoscopy for the general population begin until at the age of 50 y.⁶ In addition, there is also a lack of awareness when young patients present with abdominal and rectal complaints.⁷

There is controversy as to how the outcomes for younger patients with CRC compare to those of older patients. Some investigators have proposed that younger patients have inferior outcomes due to differences in tumor biology.^{8–10} Others

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<http://dx.doi.org/10.1016/j.jss.2016.05.036>

Table 1 – Demographics, tumor, and treatment characteristics.

	n = 11,071 (%)
Patient characteristics	
Age at diagnosis, y	
15-19	145 (1.3)
20-24	492 (4.4)
25-29	1313 (11.9)
30-34	3003 (27.1)
35-39	6118 (55.3)
Gender	
Female	5218 (47.1)
Male	5853 (52.9)
Race and/or ethnicity	
White non-Hispanic	6269 (56.6)
White-Hispanic	2018 (18.2)
Black	1426 (12.9)
Other (Asian/American Indian)	1358 (12.3)
Insurance status	
Uninsured	319 (3.2)
Insured	10,722 (96.8)
Country of birth	
US born	4574 (72.1)
Non-US born	1768 (27.9)
SES	
Normal SES	8339 (75.3)
Low SES	2731 (24.7)
Tumor and treatment characteristics	
Tumor location	
Appendix	327 (3.0)
Proximal colon (including cecum, hepatic flexure, and transverse colon)	3092 (27.9)
Distal colon (including splenic flexure, sigmoid, rectosigmoid junction)	4,562 (41.2)
Rectum	2,812 (25.4)
Unknown	278 (2.5)
Summary	
Localized	3126 (28.2)
Regional	4859 (43.9)
Distant	3086 (27.9)
Tumor grade	
Well and/or moderately differentiated	7152 (72.1)
Poor or undifferentiated	2751 (27.9)
Histology	
Adenocarcinoma	9052 (81.8)
Mucinous	1566 (14.1)
Signet-cell	453 (4.1)
CEA	
Positive CEA	1669 (46.4)
Negative CEA	1931 (53.6)
RT (radiation)	
No RT	8782 (79.3)
Yes RT	2289 (20.7)

(continued)

Table 1 – (continued)

	n = 11,071 (%)
Extent of nodal dissection	
<12 nodes harvested	4376 (40.7)
≥12 nodes harvested	6381 (59.3)
Type of surgery	
No surgery	988 (10.7)
Biopsy only	383 (4.2)
Partial colectomy and/or lower anterior resection	3902 (42.4)
Hemicolectomy and/or rectal pull through	2848 (30.9)
Total colectomy/proctectomy	665 (7.2)
Total proctocolectomy	198 (2.1)
En bloc resection	229 (2.5)
Extent of surgery	
Biopsy or no surgery	1371 (14.9)
Partial or hemicolectomy	6750 (73.3)
Total colectomy or more	1091 (11.9)

RT = radiation therapy.

however, have reported superior survival for younger patients when matched by stage.^{11,12}

Due to the low overall incidence of CRC in the AYA population and the unique age range that straddles both “pediatric” and “adult” cohort, few studies have explored CRC specifically in the AYAs, and the outcomes of these patients are poorly understood. Therefore, the purpose of this study was to look at the sociodemographic, cancer-specific factors, and survival outcomes of CRC in AYAs using the Surveillance, Epidemiology and End Results (SEER) Database.

Materials and methods

Data source

This study used public use data from 17 registries of the SEER program, which has been extensively described elsewhere.¹³ The 17 SEER registries currently cover approximately 26% of the total US population and include the states of Connecticut, Hawaii, Iowa, New Mexico, Kentucky, Louisiana, New Jersey, and Utah; the metropolitan areas of Atlanta, Detroit, and San Francisco-Oakland; Los Angeles County, the four-county area of San Jose-Monterey, and greater California; the 13-county area of Seattle-Puget Sound; rural Georgia; and the Alaska Native tumor registry. The populations in these areas are generally representative of the US population as a whole, although they are somewhat more urban and racially diverse. After cancer is diagnosed by biopsy, medical records are abstracted for patient demographics, primary tumor site, morphology, stage at diagnosis, and first course of cancer-directed treatment. Because the SEER database is publicly available and all patient information is deidentified, this study was granted an exemption from institutional review board approval.

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