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ARAŞTIRMA / RESEARCH

Incidence of colorectal cancer and survival rates of older patients in Antalya-Turkey, 2002–2016: a population-based registry study

Antalya'da kolorektal kanser insidans ve sağkalım hızları, 2002–2016: topluma dayalı bir kayıt çalışması

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Abstract

Purpose: This study aimed to investigate the incidence and survival rates of advanced colorectal cancer patients using data from 2002 to 2016 of the Antalya Provincial Health Directorate Cancer Registry Center.
Materials and Methods: The incidence and survival rates of cases diagnosed with colorectal cancer were calculated by using the community-based Cancer Registry Center records that actively collect data from the field within the Antalya Provincial Health Directorate.
Results: In Antalya, between 2002 and 2016, the overall incidence was found to be 19.5 per hundred thousand for women and 11.6 per hundred thousand for men. At the time of diagnosis, 75.0% of the cases have passed the localized phase, and 25.0% show distant spread. The overall survival time was 6.0 ± 0.1 years, and patients aged < 65 years old at diagnosis had a relatively longer survival time. The colon cancer and moderately differentiated groups had a higher 10-year cumulative survival. Patients aged < 65 years old at diagnosis had a better prognosis (1.25 times) than older patients, and patients treated surgically had a better prognosis (7.53 times) than those treated with other treatments.
Conclusion: According to our study results, the stage of colorectal cancer is more advanced at the time of diagnosis in Antalya, and therefore there is less chance of surgical treatment that extends the survival time more. Early diagnosis gains importance as the type of treatment during diagnosis affects its prognosis.

Keywords:. Colorectal cancer, colorectal cancer incidence, colorectal cancer survival rate

Öz

Amaç: Bu çalışma, Antalya İl Sağlık Müdürlüğü Kanser Kayıt Merkezi'nin 2002–2016 yılları arasını kapsayan verileri kullanarak ileri yaştaki kolorektal kanser tanılı hastaların insidans ve sağkalım hızlarını incelemeyi amaçlamıştır.
Gereç ve Yöntem: Antalya İl Sağlık Müdürlüğü bünyesinde aktif olarak sahadan veri toplayan topluma dayalı Kanser Kayıt Merkezi kayıtları kullanılarak, kolorektal kanser tanılı vakaların insidansları ile sağkalım hızları hesaplanmıştır.
Bulgular: Antalya'da 2002 – 2016 arasında genel insidans kadınlarda yüzbinde 19,5 ve erkeklerde yüzbinde 11,6 olarak bulunmuştur. Tanı konduğu sırada vakaların %75,0'i localize evreyi geçmiş durumda, %25,0'i uzak yayılım göstermektedir. Genel sağkalım süresi 6,0 ± 0,1 yıl olarak saptanmış ve 65 yaş öncesinde tanı almış olanlarda rölatif olarak daha uzun yaşam süresi olduğu görülmüştür. Rektum yerine kolonda yerleşmiş kanserlerin ile orta düzeyde diferansiye olanlar daha yüksek oranda 10-yıllık kümülatif sağkalım süresine sahiptir. Kolorektal kanser tanısını 65 yaşından önce almış olanların, daha sonra tanı almış olanlara göre 1,25 kez, cerrahi yolla tedavi edilenlerin, diğer yöntemlerle tedavi uygulananlara göre 7,53 kez daha iyi prognoza sahip oldukları görülmüştür.
Sonuç: Çalışma sonuçlarımıza göre, Antalya'da tanı anında kolorektal kanserin tespit edilen evresi ileri evredir ve bu nedenle sağkalım süresini uzatan cerrahi tedavi şansı daha az olmaktadır. Tanı sırasındaki tedavi türü prognozunu etkilediğinden erken tanı önem kazanmaktadır.

Anahtar kelimeler: Kolorektal kanser, kolorektal kanser insidansı, kolorektal kanser sağkalım hızı

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INTRODUCTION

Colorectal cancer (CRC; 1.8 million cases worldwide and 10.2% of total cancer cases) is the third most commonly diagnosed cancer, and cervical cancer ranks fourth worldwide in terms of incidence (6.6%) and mortality (7.5%),[1-8] with the highest incidence in patients aged >70 years[8]. More than 65% of new diagnoses occur in countries with high or very high levels of economic development, with almost half of the estimated new cases occurring in Europe and the Americas. Worldwide, CRC is the fourth most common cause of death from cancer, with an estimated 694,000 fatalities annually[1]. The current demographic trends toward rapid aging of the population in developed countries are leading to more older patients generally, and this is expected to further increase the number of patients with CRC[3,5-7]. According to the 2014 data from the Ministry of Health, the incidence of CRC is the third highest among all types of cancer in both sexes in Turkey. Accordingly, primary care providers execute population-based national cancer screening programs aimed at CRC and recommend that all individuals aged between 50 and 70 years should be included in this program[9].

Many factors in the studies performed in the last half century in patients with CRC has been associated with survival. Many different factors associated with the patient and tumor, such as the CRC stage, are thought to be closely related to the prognosis[10]. The 5-year survival rate of people with localized stage colorectal cancer is 90%. About 39% of patients are diagnosed at this early stage. If the cancer has spread to surrounding tissues or organs and/or the regional lymph nodes, the 5-year survival rate is 71%. If the cancer has spread to distant parts of the body, the 5-year survival rate is 14%[11]. This study aimed to examine the incidence of CRC and survival rates of older patients using data from the Antalya program of the Population-Based Cancer Registry (PBCR) developed during 2002–2016.

MATERIALS AND METHODS

On the basis of the Antalya PBCR data, the number and proportion of new cancer cases and crude age-specific incidence rate (cASR) per 100,000 among adults aged ≥65 years for different CRC sites were determined, following permission from the Provincial Health Directorate and approval of the ethics board (approval code 10/12). Procedures were followed in accordance with the ethical standards of the responsible committee on human experimentation and with the Helsinki Declaration of 1975 as revised in 2000.

PBCR is considered gold standard for collecting data on all new cancer cases. Therefore, these programs are essential for estimating the burden of cancer on specific populations, particularly when aiming to provide a framework for clarifying community-based risk factors and monitoring efforts to control this disease.[12] Since 1996, PBCR has registered all newly diagnosed malignancies in Antalya. For this study, we used data of cases who live in Antalya. Trained data managers continually gather patient, tumor, and treatment characteristics directly from medical records. The primary sources of information collected by the Antalya Center for Cancer Registry include cancer centers (KETEM and all of other centers), major hospitals, pathology departments, and death certificates from the death registration system. The International Classification of Diseases for Oncology, 3rd edition (ICD-O-3), has been used for data collection to code the topography and histology of malignant tumors, and the rules of The International Agency for Research on Cancer (IARC) were used to distinguish among multiple primaries. These data were imported into CanReg4, which is an open-source tool that allows information input, storage, checking, and processing. Then, this program was used to estimate age-specific incidence rate (ASR) per 100,000 for all types of cancers.

Sample

All patients in this study were aged ≥65 years and had been diagnosed between January 1, 2002, and December 31, 2016, for cancers of the colon (ICD-O-3 C18) and rectum (ICD-O-3 C19.-C20). Because this age group had the highest prevalence of CRC, it was preferred to work on the older population, i.e., those aged ≥65 years.[3, 5-7] Among the multiple data items routinely collected for this study, the following items were extracted: age at diagnosis, year of diagnosis, primary tumor site, tumor histology, differentiation (grade), and stage. Tumor grades were coded as 1 (well differentiated), 2 (moderately differentiated), 3 (poorly differentiated), or unknown. Regarding staging, the Surveillance, Epidemiology, and End Results for cancer staging system was used, and patients were categorized into four groups: localized, regional, distant, and unknown.

Histologically, cancers were coded as adenocarcinoma, mucinous adenocarcinoma, other carcinomas, and others (sarcoma, fibrosarcoma, mucoepidermoid, etc.). To characterize age at diagnosis, four broad age groups were created: <65, 65–74, 75–84, and ≥85 years.

Statistical analysis

Overall survival (OS) and cumulative survival (CS) rates of older patients with CRC were determined using Kaplan–Meier analysis. Log-rank test (Mantel–Cox) was used to assess the statistical differences among survival curves by each categorical variable: age at diagnosis, sex, histology, primary tumor site, stage at diagnosis, tumor grade, and type of therapy ($P = 0.05$). A multivariable Cox model was developed to identify independent prognostic factors for OS in older patients with CRC. Statistical analyses were conducted in accordance with the international statistical reporting standards.[13] SPSS 23.0 was used for all analysis.

RESULTS

We assessed the incidence of CRC and survival rates of older patients in Antalya from 2002 to 2016 using data of 4,123 older patients (2,460 with colon and 1,663 with rectal cancer). The clinical characteristics and demographics of the 4,123 patients with CRC are shown in Table 1, which separates the data into three 5-year periods to help in clarifying broad trends. There were 936 patients (22.7%) during 2002–2006, 1,336 (32.4%) during 2007–2011, and 1,851 (44.9%) during 2012–2016. The majority of these patients were male (60.9%), median current age was 77.0 ± 8.6 (range 65–105) years, and median age at diagnosis was 68.0 ± 8.7 (range 48–97) years.

As shown in Table 1, chi-square analyses revealed that several factors had significant impacts over the three time periods. Here, dramatic changes occurred during the last time period when many performance metrics for the regional health system appear to have improved substantially. For example, those aged >65 years were much more likely to have been diagnosed with cancer during 2012–2016. It is also clear that, particularly in this last period, the age at diagnosis and proportion of patients who were alive were both relatively high. Regarding the various tumor characteristics, it was found that the rates for regional, adenocarcinoma, and moderately differentiated cancers were more prominent than the rates of other categories, particularly during 2012–2016. Regarding treatment, dramatic improvements were observed for all categories involved, particularly during 2012–2016.

Incidence

For all cancers, the crude incidence rates (CIRs) per 100,000 increased over the study period. In particular, CIR per 100,000 was 181.5 for males and 134.4 for females during 2002–2006, 201.4 for males and 145.4 for females during 2007–2011, and 217.8 for males and 173.1 for females during 2012–2016.

ASR per 100,000 for all cancers showed a relatively flat trend, with ASR per 100,000 being 204.2 for males and 138.7 for females during 2002–2006, 219.6 for males and 138.5 for females during 2007–2011, and 212.4 for males and 150.4 for females during 2012–2016.

Regarding CRC, the overall ASR across the entire study period was 19.5 and 11.6 per 100,000 for males and females, respectively. As shown in Figure 1, patients aged ≥65 years had higher ASRs than those aged <65 years. However, regarding females, these rates showed a decrease for those aged >80 years.

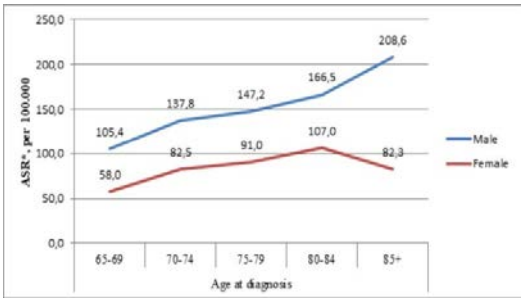

Figure 1. ASR of colorectal cancer in older patients by sex during 2002–2016

aASR: age-specific incidence per 100,000

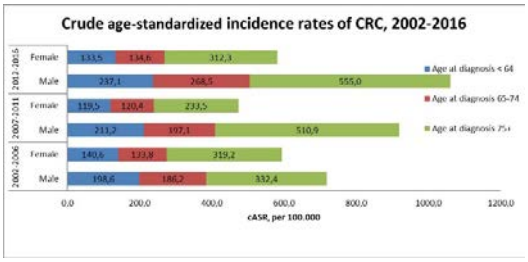

Figure 2. Crude age-specific incidence of colorectal cancer in older patients during 2002–2016

Regarding CRC, CIR per 100,000 was 14.4 for males and 11.4 for females during 2002–2006, 16.8 for males and 10.7 for females during 2007–2011, and 21.9 for males and 13.7 for females during 2012–2016. Further, ASR per 100,000 was 16.0 for males and 12.0 for females during early 2002–2006, 17.8 for males and 10.2 for females during 2007–2011, and 21.1 for males and 11.7 for females during 2012–2016. Figure 2 shows that cASR for CRC was higher for patients aged ≥75 years during 2012–2016. Such rates were notably higher for males than for females during 2002–2006 ($\chi^2 = 7.13$, $p = 0.03$). Concerning males, cASR significantly increased in each time category and age group ($\chi^2 = 17.03$, $p = 0.001$).

Table 1. Characteristics of colorectal cancer cases[a] by year of diagnosis, 2002–2016, %

Characteristic		Total[b] (n = 4123)	2002–2006 (n = 936)	2007–2011 (n = 1336)	2012–2016 (n = 1851)	χ^2 and p
Sex	Male	60.9	21.1	32.6	46.3	10.18
	Female	39.1	25.2	32.1	42.7	0.006
Age at diagnosis (years)	<65	33.5	30.8	37.5	31.7	182.2 0.0001
	65–74	37.5	20.9	28.5	50.6	
	75–84	25.1	16.9	32.5	50.6	
	≥85	3.9	7.5	26.3	66.2	
Primary tumor site	Colon	59.7	22.8	32.0	45.2	0.57
	Rectum	40.3	22.5	33.1	44.4	0.75
Stage at diagnosis	Localized	25.6	25.5	24.5	24.9	80.13 0.0001
	Regional	48.8	50.9	49.8	50.0	
	Distant	25.6	23.6	25.5	25.1	
Histology at diagnosis	Adenocarcinoma	77.5	22.1	31.7	46.2	39.01 0.0001
	Mucioneus adenocarcinoma	12.6	19.0	36.0	46.0	
	Other carcinoma	9.1	33.0	35.1	31.9	
Differentiation at diagnosis	Well differentiated	21.4	18.5	28.2	53.3	60.69 0.0001
	Moderately differentiated	38.3	21.1	34.7	44.2	
	Poorly differentiated	5.9	17.6	35.9	46.5	
	Undifferentiated	0.6	31.8	22.7	45.5	
Treatment	Surgery	60.9	19.0	37.3	43.7	1815.9 0.0001
	CT/RT	36.6	0.1	15.6	84.4	
	Others[c]	2.5	3.8	96.2	0.0	

[a]Colorectal cancer (C18–21) by site (International Classification of Diseases for Oncology Third Edition code); [b]Column percentage, the other percentages are row's; [c]Others include immunotherapy, hormone therapy, and alternative medicine

Survival

Survival analysis was performed using Kaplan–Meier method for 4,123 cases for which follow-up details could be obtained. These results are presented in Table 2. Concerning CRC, OS was 6.0 ± 0.1 (5.8–6.3) years. Statistical differences of how survival curves might be influenced by several factors were assessed using log-rank test (Mantel–Cox), and it was found that the following groups had relatively higher OS: those aged <65 years at diagnosis (7.0 years; $p < 0.0001$) in the age at diagnosis category; "localized" group (7.1 years; $p < 0.0001$) in the stage category; "adenocarcinoma" group (6.0 years; $p < 0.0001$) in the morphology category, and "surgery" group (6.0 years; $p < 0.0001$) in the treatment category. There was no significant difference between the curves of sex and primary tumor site.

During 2002–2016, 1-, 5-, and 10-year CS were 73.0%, 55.5%, and 20.5%, respectively, in older patients (Table 3). Slightly higher 1-, 5-, and 10-year CS were observed in females than in males (73.5% vs 72.6%, 57.4% vs 54.3%, and 23.3% vs 18.6%, respectively). Further, higher 1-, 5-, and 10-year CS were observed in those aged <65 years at diagnosis than in those aged ≥65 years at diagnosis (78.6% vs 67.7%, 65.2% vs 44.8%,and 26.2% vs 14.1% respectively), and higher 1-, 5-, and 10-year CS were observed in the surgery group than in others groups (84.4% vs 34.3%, 77.7% vs 23.6%, and 33.9% vs 0.2%, respectively). Regarding histology, the adenocarcinoma group had higher 1-, 5-, and 10-year

CS than other morphology groups; (79.9% vs 75.3%, 64.3% vs 49.3%, and 39.5% vs 16.4%, respectively). Regarding primary tumor site, the colon cancer group had a higher 10-year CS than the rectal cancer group (22.0% vs 18.1%), whereas the "well differentiated" group had a higher 10-year CS than the other groups (19.4% vs 15.8%).

Cox proportional regression analysis

In preliminary analysis, numerous variables were included in multiple Cox proportional regression analysis of survival rates, particularly sex, age at diagnosis, primary tumor site, stage, histology, differentiation, and type of treatment. As shown in Table 4, factors with a particularly strong statistical significance included age at diagnosis and type of treatment during follow-up, with hazard ratios of 1.25 and 7.53, respectively (Table 4, $p < 0.0001$). According to these values, compared with older patients, those aged <65 years at diagnosis had a better prognosis (1.25 times), and compared with other groups, the surgery group had a better prognosis (7.53 times).

Table 2. Overall survival (OS) with 95% confidence intervals (CI) of older patients with colorectal cancer during 2002–2016 by some patient and tumor characteristics

Characteristic	Event/ Number of cases	Cencored (%)	Survival time ± SE (95% CI)	Log-rank test (*p*)
Sex				3.84 0.05
Male	1310/2512	1202 (47.9)	6.0 ± 0.1 (5.7 - 6.3)	
Female	829/1611	782 (48.5)	6.0 ± 0.2 (5.6 - 6.4)	
Age at diagnosis (years)				62.05 0.0001
<65	808/1383	575 (41.6)	7.0 ± 0.2 (6.6–7.4)	
65–74	873/1545	672 (43.5)	5.0 ± 0.2 (4.7–5.3)	
75–84	411/1035	624 (40.3)	6.0 ± 0.2 (5.6–6.4)	
≥85	47/160	113 (70.6)	5.0 ± 0.5 (3.9–6.0)	
Primary tumor site				1.77 0.18
Colon	1266/2460	1194 (48.5)	6.0 ± 0.2 (5.7–6.3)	
Rectum	873/1663	790 (47.5)	6.0 ± 0.2 (5.6–6.4)	
Stage at diagnosis				27.98 0.0001
Localized	497/712	215 (30.2)	7.1 ± 0.2 (4.7–5.3)	
Regional	940/1622	682 (42.0)	6.0 ± 0.2 (5.7–6.3)	
Distant	199/675	476 (70.5)	4.6 ± 0.4 (4.2–6.8)	
Histology at diagnosis				23.11 0.0001
Adenocarcinoma	1720/3162	1442 (45.6)	6.0 ± 0.1 (5.8–6.3)	
Mucioneus adenocarcinoma	253/515	262 (50.9)	4.3 ± 0.3 (4.1–6.6)	
Other carcinoma	129/373	244 (65.4)	5.7 ± 0.6 (5.9–8.2)	
Differentiation at diagnosis				26.22 0.0001
Well differentiated	552/883	331 (37.5)	7.0 ± 0.3 (4.7–5.3)	
Moderately differentiated	877/1581	704 (44.5)	6.0 ± 0.2 (5.6–6.4)	
Poorly differentiated	110/245	135 (55.1)	5.6 ± 0.6 (4.9–7.1)	
Undifferentiated	8/22	14 (63.6)	4.4 ± 3.1 (1.9–14.0)	
Treatment				1048.01 0.0001
Surgery	1046/2509	1463 (58.3)	9.0 ± 0.1 (8.7–9.3)	
CT/RT	1035/1509	474 (31.4)	2.0 ± 0.3 (1.4–2.6)	
Others[a]	58/105	47 (44.8)	1.0 ± 0.2 (1.6–2.4)	
Overall survival	2139/4123	1984 (48.1)	6.0 ± 0.1 (5.8–6.3)	

[a]Others include immunotherapy, hormone therapy, and alternative medicine

Table 3. One-year, 5-year, and 10-year cumulative survival of older patients with colorectal cancer during 2002–2016, Antalya, by some patient and tumor characteristics

Characteristic	Number of cases	One-year survival ± SE	Five-year survival ± SE	Ten-year survival ± SE
Sex				
Male	2512	72.6% ± 0.9%	54.3% ± 1.3%	18.6% ± 1.3%
Female	1611	73.5% ± 1.2%	57.4% ± 1.5%	23.3% ± 1.7%
Age at diagnosis (years)				
<65	1383	78.6% ± 1.1%	65.2% ± 1.5%	26.2% ± 1.7%
65–74	1545	67.5% ± 1.3%	48.0% ± 1.6%	17.0% ± 1.5%
75–84	1035	74.0% ± 1.5%	51.5% ± 2.4%	14.1% ± 2.4%
≥85	160	67.7% ± 4.4%	44.8% ± 7.8%	-
Primary tumor site				
Colon	2460	73.5% ± 1.0%	55.9% ± 1.3%	22.0% ± 1.3%
Rectum	1663	72.3% ± 1.2%	55.1% ± 1.5%	18.1% ± 1.6%
Stage at diagnosis				
Localized	712	76.1% ± 1.9%	56.7% ± 2.7%	43.2% ± 2.9%
Regional	1622	72.0% ± 1.2%	52.7% ± 1.5%	29.9% ± 1.2%
Distant	675	61.5% ± 2.9%	35.9% ± 3.9%	13.3% ± 4.6%
Histology at diagnosis				
Adenocarcinoma	3162	79.9% ± 0.9%	64.3% ± 1.1%	39.5% ± 1.1%
Mucioneus adenocarcinoma	515	59.0% ± 0.3%	27.6% ± 2.8%	12.2% ± 3.0%
Other carcinoma	373	74.0% ± 0.5%	65.2% ± 3.7%	29.3% ± 4.5%
Others	30	75.3% ± 4.6%	49.3% ± 17.4%	16.4% ± 14.6%
Differentiation at diagnosis				
Well differentiated	883	78.4% ± 1.6%	58.5% ± 2.0%	35.8% ± 1.8%
Moderately differentiated	1581	74.2% ± 1.1%	57.6% ± 1.5%	19.4% ± 1.5%
Poorly differentiated	245	70.0% ± 3.1%	56.3% ± 4.0%	15.1% ± 4.8%
Undifferentiated	22	59.5% ± 9.2%	29.7% ± 18.5%	12.9% ± 17.4%
Treatment				
Surgery	2195	84.4% ± 0.8%	77.7% ± 1.0%	33.9% ± 1.6%
CT/RT	1509	57.2% ± 1.3%	23.6% ± 1.4%	0.2% ± 0.2%
Others[a]	314	34.3% ± 5.9%	-	-
Overall Survival	4123	73.0% ± 0.7%	55.5% ± 1.0%	20.5% ± 1.0%

[a]Others include immunotherapy, hormone therapy and alternative medicine

Table 4. Cox regression analysis of prognostic factors for overall survival in older patients with colorectal cancer during 2002–2016

Variable		β	Wald	HR (Exp β)	95% CI	*p*-value
Sex	Male					
	Female	09	3.7	0.91	0.83–1.00	0.05
Age at diagnosis (years)	<65					
	65–74	0.22	16.8	1.25	1.12–1.39	0.0001
	75–84	0.15	5.19	1.17	1.02–1.33	0.02
	≥85	0.11	0.48	1.12	0.82–1.51	0.49
Primary tumor site	Colon					
	Rectum	0.08	2.46	1.08	0.98–1.19	0.12
Stage	Localized					
	Regional	0.31	0.29	1.03	0.92–1.16	0.59
	Distant	−0.11	1.47	0.89	0.75–1.07	0.23
	Unknown	0.15	2.65	1.16	0.97–1.38	0.10

Histology	Adenocarcinoma					
	Mucinous adenocarcinoma	−0.19	6.66	0.83	0.72–0.96	0.10
	Other carcinoma	−0.53	21.9	0.9	0.47–0.74	0.0001
	Others	−0.47	1.72	0.62	0.31–1.29	0.19
Differentiation	Well differentiated					
	Moderately differentiated	−0.09	2.87	0.91	0.81–1.02	0.09
	Poorly differentiated	0.03	0.07	1.03	0.83–1.28	0.79
	Undifferentiated	−0.01	0.01	0.99	0.45–2.09	0.97
Treatment	Others					
	Surgery	2.02	803.0	7.53	6.56–8.66	0.0001
	CT/RT	1.99	367.3	7.38	6.02–9.06	0.0001

DISCUSSION

This study provides important information about the incidence of CRC and several factors affecting the survival rates of patients with CRC in Antalya, Turkey. Regarding CRC, ASR during 2002–2016 was 19.5 per 100,000 for males and 11.6 per 100,000 for females. In addition, during this period, CIR per 100,000 increased across all time periods for both males (14.4, 16.8, and 21.9) and females (11.4, 10.7, and 13.7). These results are consistent with those of an earlier study reporting that the incidence of CRC was higher among males and that sex differences were the highest in the population aged ≥65 years[14].

In this study, it was found that the incidence of CRC increased during 2002–2016 and that this trend increased notably during 2012–2016. However, analysis during the period after 65 years of age revealed that the number of cases decreased across all time periods as age increased. At present, the incidence of CRC is increasing, and this is expected to accelerate in the future.[15] One study in the USA indicated that the incidence of CRC was higher among males than among females and that there was a 32% decline in the incidence among those aged ≥50 years.[16] Another study reported that although the overall incidence of CRC has increased over the past three decades (which is particularly true for colon cancer), there has been a decreasing trend in the incidences of rectal and anal cancers in older patients.[6] Another study conducted from the 2000s reported that their findings confirm an increase in the incidence of CRC.[17]

The current study also showed that patients aged ≥65 years had a higher incidence of CRC than those aged <65 years, but during 2002–2016, these rates actually decreased among patients aged >74 years.

In a broader sense, there is an evidence of a global trend of a higher incidence of CRC among males than among females (746,298 vs 614,304 or (20.6 vs 14.3 ASR)),[17] and this disease is most common in the 40–60-year age group.[18,19] In the USA, evidence suggests that the overall incidence of CRC in individuals aged ≥50 years declined from 2009 to 2013 in every state of the USA.[2] Interestingly, from 2004 to 2014 in Massachusetts, there were significant annual decreases in the incidence of prostate cancer and CRC among adults aged ≥85 years as well as a decline in the incidence of lung cancer among males aged ≥85 years and of breast cancer among females aged ≥85 years.[20] However, females diagnosed with early-stage CRC lived longer and had better general health than their male counterparts.[21]

Another noteworthy global data point in this regard comes from a study conducted in Australia, which examined data on approximately 375,000 cases of CRC during 1982–2014. It estimated that there was an overall reduction in the incidence of colon cancer among older adults (age > 70 years) at 1.9%–4.9% per annum from 2010 onward and a lower rate of reduction in the incidence of rectal cancer at 1.1%–1.8% per annum from early 2000s onward.[4] In that study, OS was 6.0 ± 0.1 (5.8–6.3) years, and the overall 1-, 5-, and 10-year CS were 73.0%, 55.5%, and 20.5%, respectively, for older patients during 2002–2016. This result is consistent with that in the literature showing 5-year OS to be 65% in North America, 54% in Western Europe, 34% in Eastern Europe, and 30% in India.[10] Another study conducted in India found that overall and disease-free 3-year OS were 89.1% and 88%, respectively.[19]

In this study, females aged <65 years at diagnosis; localized group in the stage category; adenocarcinoma group in the morphology category; and surgery group in the treatment category had higher 1-, 5-, and 10-year CS than their counterparts. The study conducted in India demonstrated that among the eight significant factors explored in univariate analyses, tumor histology, depth of invasion, and perineural invasion had independent prognostic significance in multivariate analysis.[19]

This study also found that age at diagnosis and type of treatment were significant risk factors during follow-up (hazard ratio 1.25 vs 7.53). Younger age at diagnosis and surgical treatment were found to be better prognostic factors.

The many pathological prognostic factors involved in CRC reflect the biological behavior of tumor tissue as well as influence the choice of treatments and odds of survival. In this study, it was found that according to tumor characteristics, within the known-stage cases, a high proportion was regional. Likewise, regarding the known-differentiation cases, a high proportion was moderately differentiated at diagnosis. It was also found that adenocarcinoma was the dominant histological type for morphological assessment at diagnosis, and the other carcinomas group clearly had higher 5- and 10-year cumulative CS.

Another study based in Izmir, Turkey, found that there was a high proportion of well-differentiated cancers (15.9%) and of cases diagnosed at the regional stage (53.4%).[16] The majority of tumors were well-differentiated adenocarcinomas with invasion beyond the muscularis propria without vascular or perineural invasion and lymph node involvement; further, they were stage II cancers (regional).[22] In that study, colon cancer and moderately differentiated groups had a high 10-year CS.

CRC is frequently more complicated at diagnosis among older patients than among younger patients, and adjuvant and palliative chemotherapy are irregularly prescribed to older patients. This situation could be explained by the fact that older patients in poor physical condition often do not undergo chemotherapy, but it could also certainly reflect the fact that some relatively fit older patients are undertreated.[8] Chemotherapy was less frequently prescribed to older patients,[23] and age, as well as comorbidities, worsened the OS of older patients with CRC who underwent curative surgery.[24]

The limitation of our study is that it represents the results of people residing within the borders of Antalya province.

In conclusion, according to our study results, the stage of colorectal cancer is more advanced at the time of diagnosis in Antalya, and therefore there is less chance of surgical treatment that extends the survival time more. Early diagnosis gains importance as the type of treatment during diagnosis affects its prognosis. For this reason, we think that intervention studies are needed in order to increase the participation rate of the Ministry of Health in the cancer screening program in Antalya and to determine the method to achieve this goal.

Yazar Katkıları: Çalışma konsepti/Tasarımı: OD; Veri toplama: OD; Veri analizi ve yorumlama: OD; Yazı taslağı: OD; İçeriğin eleştirel incelenmesi: ÜH; Son onay ve sorumluluk: OD, ÜH; Teknik ve malzeme desteği: -; Süpervizyon: ÜH; Fon sağlama (mevcut ise): yok.
Etik Onay: Bu çalışma için S.B.Ü. Antalya Eğitim ve Araştırma Hastanesi Klnik Araştırmalar Etik Kurulundan 28.03.2019 tarih ve 10*12 sayılı kararı ile etik onay alınmıştır.
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