COLORECTAL CANCER IN THE SPLIT-DALMATIA COUNTY

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SUMMARY – Colorectal cancer was the second leading cause of cancer deaths in the Split-Dalmatia County during the 1993-2005 period. The primary aim of this study was to analyze recent trends in the mortality caused by colorectal cancer in the Split-Dalmatia County. Secondly, the aim was also to analyze data on colorectal cancer patients operated on at Split University Hospital Center according to sex, age, localization of cancer and Dukes staging, in the period from January 1, 2003 to December 31, 2004. The colorectal cancer death rate was found to be on an increase in both men and women; however, it was higher in men in both study years. The colorectal cancer death rate was also found to increase with age in both men and women. Analysis of data on patients operated on for colorectal cancer yielded a 2:1 male to female ratio. Analysis of histopathologic staging according to Dukes produced a statistically significant difference ($P<0.0001$). Dukes B or C was diagnosed in 84.3% and Dukes A in 9.3% of cases. According to cancer localization, sigmoid colon and rectum were involved 1.8 times more frequently than other sites of the colon. The data obtained in this study indicated that only 9.3% of patients were treated in the early stage of disease (Dukes A), pointing to the need of organized medical examinations for early detection of colorectal cancer in order to reduce the mortality rate associated with the disease.

Key words: *Colorectal neoplasms – epidemiology; Colorectal neoplasms – mortality; Health service research; Incidence; Croatia; Split-Dalmatia County*

Introduction

Colorectal cancer is the second most common malignant disease in Croatia, both in males and females. Its incidence and mortality are increasing. During the 1983-2005 period, the number of colorectal cancer cases increased from 1186 to 2827, and the number of deaths caused by this disease increased from 840 to 1742[1].

Colorectal cancer develops over many years due to interaction of environmental and genetic factors[2-7]. The treatment of colorectal cancer is currently dictated by its stage[8]. Staging of colorectal cancer has prognostic value and allows for deciding on adjuvant therapy. The Dukes staging system is the most important prognostic factor for survival. Detection of early stage colorectal cancer (Dukes A or B) is associated with 85% 5-year survival rate[9-12].

The primary aim of this study was to analyze recent trends in the mortality caused by colorectal cancer in the Split-Dalmatia County. Secondly, the aim was to analyze data on colorectal cancer patients operated on at Split University Hospital Center between January 1, 2003 and December 31, 2004.

Material and Methods

The study included data on patients died from colorectal cancer in the Split-Dalmatia County between 1993 and 2005. In addition, data on colorectal cancer patients operated on at University Department of Surgery, Split University Hospital Center, between January 1, 2003 and December 31, 2004 were analyzed. Data on 1836 patients died from colorectal cancer were analyzed according to sex, age and year of death. Data were collected from a publication entitled Study of the Population Health Condition and Health Activities 1993-2005 (Volume I) issued by the Public Health Institute of the Split-Dalmatia County and 2001 Census issued by the Central Bureau of Statistics of Croatia. We also analyzed data on 327 colorectal patients operated on at University Department of Surgery, collected from patient files. These data were analyzed according to sex, age, localization of cancer and Dukes staging.

Statistics

The χ^2-test was used to compare the mean mortality rate *per* year between male and female patients, and to test patient frequency distribution according to Dukes staging related to the expected frequency (expected frequency/Dukes=82). T-test was used to compare male and female colorectal cancer patients according to age.

Results

Out of 1836 patients that died from colorectal cancer in the Split-Dalmatia County, there were 1095 (60%) male and 741 (40%) female patients (Table 1). During the 13-year period of observation, the mean mortality rate *per* year in male and female colorectal cancer patients was 37.2 (95% CI: 28-47) and 24 (95% CI: 17-31), respectively, being statistically significantly lower in the latter ($P<0.0001$).

Analysis of total colorectal cancer death rate and colorectal cancer death rate according to sex in the Split-Dalmatia County during the 1993-2005 period showed it to be higher in male as compared to female patients in all study years. The highest total death rate and highest death rate according to sex was recorded in 2005 and lowest rate in 1993. In 2005, total colorectal cancer death rate was 2.2-fold that in 1993. Likewise, the colorectal cancer death rate was lowest in 1993 and highest in 2005 in both male and female patients. In 2005, the colorectal cancer death rate was 2.0-fold in men and 1.7-fold in women as compared with the respective figures recorded in 1993 (Fig. 1).

Table 1. Deaths from colorectal cancer according to sex (1993-2005)

Year	Number of deaths		
	Total	Male	Female
1993	101	57	44
1994	123	67	56
1995	116	67	49
1996	139	88	51
1997	126	69	57
1998	114	63	51
1999	143	79	64
2000	144	85	59
2001	135	86	49
2002	138	82	56
2003	183	118	65
2004	177	113	64
2005	197	121	76
Total	1836	1095	741

Table 2. Colorectal cancer patients operated on at Split University Hospital Center according to sex, cancer localization, histopathology (Dukes) and age (2003–2004)

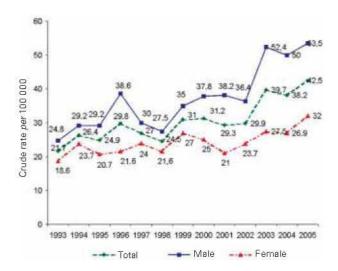| Variable		n (%)	P[*]
Sex	Male	205 (63)	
	Female	122 (37)	
Localization	Sigmoid colon	103 (32)	
	Rectum	104 (32)	
	Other sites of colon	119 (36)	
Dukes	A	29 (9.3)	<0.0001
	B	132 (42.3)	
	C	131 (42)	
	D	20 (6.4)	
Age (yrs)	Mean ± SD (min-max)	68.3±10.4 (34-95)	

[*]χ^2-test

Fig. 1. Mortality rate of colorectal cancer in the Split-Dalmatia County 1993-2005.

The colorectal cancer death rate showed an increase with age. In the 40-49 age group, death rate was 3.68-fold that recorded in the <40 age group (95%CI: 1.4-4.6 times). In 50-59 age group, death rate was 3.8-fold that in the 40-49 age group (95%CI: 2.2- 11 times). In the 60-69 age group, death rate was 2.75-fold that in the 50-59 age group (95%CI: 1.8-4.5 times). In the ≥70 age group, death rate was 2.2-fold that in the 60-69 age group (95%CI: 1.2-3.5 times) (Fig. 2).
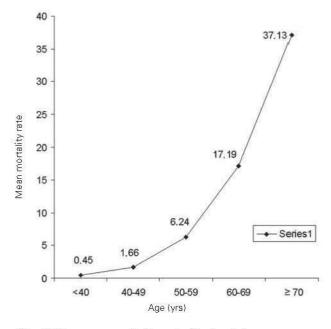

Fig. 2. The mean mortality rate of colorectal cancer according to age.

Data on patients operated on for colorectal cancer at University Department of Surgery, Split University Hospital Center, from January 1, 2003 to December 31, 2004, were also analyzed. A total of 327 patients were operated on during the study period, with a 1.7:1 male to female ratio. The mean age of male and female patients was 67.8±10.7 (range 34-95) and 68.9±10.0 (range 37-87), respectively; there was no statistically significant difference according to age (t=0.77; P=0.440). Histopathology for Dukes staging yielded a statistically significant difference (P<0.0001). Dukes B or C was diagnosed in 84.3% of cases. According to cancer localization, sigmoid colon and rectum were affected 1.8 times more often than other sites of the colon (Table 2).

Discussion

Colorectal cancer was the second leading cause of cancer deaths in the Split-Dalmatia County during the 1993-2005 period. Analysis of data collected for the study period showed the colorectal cancer mortality rate to be considerably higher in male than in female patients. During the study period, the colorectal cancer death rate increased in both sexes as well as with age. The lowest death rate was recorded in 1993 and highest in 2005. In 2003, the colorectal cancer death rate was 2.2-fold that in 1993. The analysis of data on patients operated on for colorectal cancer at Split University Hospital Center in 2003-2004 yielded a 2:1 male to female ratio. According to cancer localization, sigmoid colon and rectum were equally affected (32%) and these two localizations were 1.8 times more frequently involved than all other sites of the colon (36%). Histopathology for Dukes staging yielded a statistically significant difference, i.e. Dukes B or C was detected in 84% of patients operated on for colorectal cancer, implying tumor involvement of the large intestinal wall. Out of 312 patients operated on for colorectal cancer, there were only 29 (9.3%) patients with Dukes A. These data point to the need of organized medical examinations for early detection of colorectal cancer because the disease is obviously discovered in advanced stages in spite of currently widely available diagnostic methods. The only way to reduce the mortality and improve the quality of life of patients with colorectal cancer is to discover preneoplastic and early neoplastic lesions of the large intestine

in the asymptomatic or early symptomatic stage, and their immediate treatment. According to the guidelines issued by the American College of Gastroenterology, persons are defined as being at an average risk of colorectal cancer if they are 50 years or older and have no risk factors for colorectal cancer other than age[13]. In order to reduce the colorectal cancer mortality, the Croatian Society of Gastroenterology and Croatian Society of Oncology recommend the occult stool bleeding test for persons aged 50 and more, at least once in every two years. These procedures should be used more frequently and at younger age in persons at a higher risk of colorectal cancer. Therefore, the Croatian Ministry of Health and Social Welfare has launched a project of early colorectal cancer detection for people at an average risk, aged 50-74, using the above mentioned tests and filling out a questionnaire.

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Sažetak

RAK DEBELOG CRIJEVA U SPLITSKO-DALMATINSKOJ ŽUPANIJI

I. Tripković, M. Strnad, M. Polić-Vižintin, R. Mulić, I. Tripković i M. Rakuljić

Rak debelog crijeva bio je drugi vodeći uzrok smrti od raka u Splitsko-dalmatinskoj županiji u razdoblju od 1993. do 2005. godine. Glavni cilj ovoga istraživanja bio je ispitati novija kretanja smrtnosti od raka debelog crijeva u ovoj županiji. Drugi cilj je bio analizirati podatke o bolesnicima s rakom debelog crijeva koji su operirani u Kliničkom bolničkom centru Split prema dobi, spolu, lokalizaciji raka i stadiju prema Dukesu za razdoblje od 1. siječnja 2003. do 31. prosinca 2004. godine. Utvrđena je povećana stopa smrtnosti zbog raka debelog crijeva za oba spola. Stopa umrlih muškaraca bila je viša od stope umrlih žena s ovim oblikom raka za obje godine. Također je utvrđena povećana stopa smrtnosti prema dobi za oba spola. Analiza podataka o bolesnicima koji su operirani zbog raka debelog crijeva pokazala je kako je bilo dvaput više muškaraca nego žena. Analiza histopatoloških rezultata prema Dukesu pokazala je statistički značajnu razliku ($P<0,0001$). Stadij Dukes B ili C dijagnosticiran je u 84,3% slučajeva, a Dukes A u 9,3% slučajeva. Prema lokalizaciji karcinoma sigmoidni kolon i rektum su bili zahvaćeni 1,8 puta češće negoli ostale lokalizacije na kolonu. Podatci dobiveni u ovom ispitivanju pokazali su kako je samo 9,3% bolesnika liječeno u ranom stadiju bolesti (Dukes A), što ukazuje na potrebu organiziranih medicinskih pregleda radi ranog otkrivanja raka debelog crijeva kako bi se snizila stopa smrtnosti povezana s ovom bolešću.

Ključne riječi: *Novotvorine kolona i rektuma – epidemiologija; Novotvorine kolona i rektuma – smrtnost; Istraživanja u zdravstvu; Incidencija; Hrvatska; Splitsko-dalmatinska županija*