Higher prevalence in young population and rightward shift of colorectal carcinoma

Salman Y. Guraya, MBBS, FRCS, *Omer E. Eltinay,* MBBS, FRCS.

ABSTRACT

Objective: To report the pattern, subsite distribution and histological features of colorectal cancer in a University Hospital in Riyadh.

Methods: The study was carried out in King Khalid University Hospital, Riyadh, Kingdom of Saudi Arabia, where the medical records of patients diagnosed to have colorectal carcinoma were retrieved spanning a 5-year period from 1999 through 2004. The demographic data, primary location and extent of the lesion, and various pathologic characteristics were analyzed.

Results: Fifty-seven patients with colorectal carcinoma were included; 45 men and 12 women, age range 21-76 years (mean 44 years). Thirty-six (63%) subjects were found to be younger than 40 years, whereas 33 (57.8%) cases had right sided and 24 (42.2%) left sided colon cancers. Eighteen (31.5%) patients presented with early (I, II) and 39 (68.5%) with late (III, IV) stage. Dukes B and C were reported in 53 (92.9%) patients and out of those, 30 cases presented with right sided colonic carcinoma.

Conclusion: There is a profound rightward shift of colorectal carcinoma compounded with a rising incidence of advanced lesions in younger age group.

Saudi Med J 2006; Vol. 27 (9): 1391-1393

Colorectal carcinoma is the second most common solid tumor after skin malignancies in the United States,[1] with approximately 145,000 new cases in 2003 and 57,000 deaths.[2] Many investigators have described a change in the subsite distribution of colorectal carcinoma towards the right side,[3-6] whereas others have not confirmed this trend.[7] At the same time, a high tumor prevalence with more advanced and poorly differentiated lesions have been documented in young patients (<40 years) in a number of population-based studies.[8-10] Such observations play an integral role in the multi-disciplinary management of patients with colorectal cancer. The present study is an attempt to evaluate the demographic details, subsite distribution and the pathological features of colorectal carcinoma in a tertiary level teaching hospital in Saudi Arabia.

Methods. This retrospective analysis incorporated all consecutive patients with colorectal carcinoma managed at King Khalid University Hospital, Riyadh, Kingdom of Saudi Arabia over a 5-year period from 1999 through 2004. The data were extracted from the medical records of these patients regarding the age, gender, location of the primary tumor, and the presence of metastasis, if any and the histological characteristics of the tumors. Cancer sites in the splenic flexure and more proximal parts were grouped as right-sided while any cancer in the rectum, sigmoid, or descending colon was defined as left-sided.[6] The original Duke's classification[11] was employed for pathological staging and tumors were categorized as well, moderate and poorly differentiated. Tumor stage was assessed at the time of first clinical presentation

From the Division of General Surgery, Department of Surgery, College of Medicine and King Khalid University Hospital, King Saud University, *Kingdom of Saudi Arabia*.

Received 19th March 2006. Accepted for publication in final form 29th May 2006.

Address correspondence and reprint request to: Dr. Salman Y. Guraya, Senior Registrar Surgery, Department of Surgery (37), King Khalid University Hospital, PO Box 7805, Riyadh 11472, *Kingdom of Saudi Arabia*. Tel. +966 (1) 4671585. Fax. +966 (1) 4679493. E-mail: drsyg7@yahoo.com

Table 1 - Location of primary colorectal cancer (N=57).

Site	N (%)
Appendix	1 (1.7)
Cecum	13 (22.8)
Ascending colon	9 (15.7)
Transverse colon	10 (17.5)
Descending colon	8 (14)
Sigmoid colon	12 (21)
Rectum	2 (3.5)
Synchronous	2 (3.5)

based on the American Joint Committee on Cancer, Chicago, IL staging system; early (I, II) stage or late (III, IV) stage.[1] The resulting information was maintained using the Statistical Package for Social Sciences SPSS (SPSS Inc., Chicago, IL) database. The results were maintained using the Statistical Package for Social Science software (SPSS Inc., Chicago, IL), and further analyzed for the defined parameters.

Results. Fifty-seven patients with the diagnosis of colorectal cancer were managed over the defined study period. There were 45 men; mean age 46 years, range 21-76 years and 12 women; mean age 41 years, range 26-79 years. Thirty-six (63%) patients were younger than 40 years while the peak incidence of colorectal carcinoma was recorded in patients aged between 30-39 years. Thirty-three (57.8%) cases presented with right sided, and 24 (42.2%) with left sided tumors (**Table 1**). Histologically, 53 (92.9%) patients were found to have Duke's B and C and out of those, 30 cases had right sided lesions as detailed in **Table 2**. At the time of presentation, an advanced stage was evident by liver metastasis in 26 (45.6%) and extensive locoregional disease in 19 (33.3%) patients.

Table 2 - Histological characteristics of colorectal tumor* (N=57).

Feature	N (%)
Gross pathology	
Mass	32 (56.1)
Stricture	18 (31.5)
Ulcer	7 (12.2)
Duke's stage	
A	4 (7)
B	26 (45.6)
C	27 (47.3)
Differentiation	
Well	8 (14)
Moderate	30 (52.6)
Poor	19 (33.3)
Stage	
Early (I, II)	18 (31.5)
Late (III, IV)	39 (68.5)

* All patients were found to have adenocarcinoma.

Discussion. Recently published literature is replete with the finding of a high prevalence of colorectal carcinoma in young population (<40 years).[12-14] In the National Cancer Registry Saudi Arabia, 1997-1998,[15] the median age at diagnosis of colorectal carcinoma was 60 years for males and 55 years for females whereas in 1999-2000[16] the reported incidence was 59 years for men and 56 years for women. Our study revealed an estimated mean age of 46 for men and 41 for women, which accounted for 63% incidence of colorectal cancer in patients younger than 40 years and out of these, 32 (56.1%) were found to have advanced (Duke's B, C and Stage III, IV) lesions. Furthermore, these tumors were more poorly differentiated which could be attributed to the biologically aggressive nature of the colorectal carcinoma in younger patients.[10] At the same time, a higher prevalence of colorectal cancer in younger age group may be due to a delay in screening based on age limitations in the existing recommendation; anal digital examination at the age of 40 years, fecal occult blood testing every year starting at 50 year, and flexible sigmoidoscopy every 3-5 years from 50 years onwards.[17]

Our series reaffirmed the general trend towards a proximal right sided migration of colorectal carcinoma which has been reported in a number of population-based studies.[6,18,19] Some researchers documented that the rightward shift of colorectal carcinoma was more pronounced in females,[20,21] elderly patients,[22] or African Americans.[23] Such differences have led to the hypothesis that different genetic and environmental factors could be implicated in this evolution.[24] Presently, fecal occult blood test as well as rigid and flexible sigmoidoscopy are particularly geared towards the diagnosis and screening of left sided neoplastic lesions. Colonoscopy is generally reserved for those with positive findings on these screening tests or those with higher than average risk for colorectal carcinoma.[25]

West et al[26] have pointed out the drastic effect of dietary changes over the past decade. A high protein diet increases the risk of distal colorectal cancer, whereas a high fat diet enhances the likelihood of proximal lesions. The determination of a changing trend in subsite distribution of colorectal carcinoma towards right side further emphasizes the need for colonoscopy in the screening program. Recommending a colonoscopic examination only after the discovery of an abnormality on flexible sigmoidoscopy will

expose a significant number of patients to diagnostic delay. Flexible sigmoidoscopy will certainly miss cancerous and precancerous lesions on the right side of colon which harbors approximately 40-50% of all carcinomatous growths of the large bowel.[6]

In conclusion, the present series clearly illustrated a significant rightward shift of colorectal carcinoma with a higher prevalence of advanced lesions in young patients. As this study reported a single institution results, further evidence-based cross-sectional studies are required to second our observations. If validated, a strong recommendation for colonoscopy should be sought as a part of colorectal screening program.

References

1. Silverberg E. Cancer statistics. New York (NY): American Cancer Society; 1987.
2. Jemal A, Muwa T, Samuels A. Cancer statistics 2003. ***CA Cancer J Clin*** 2003; 53: 5-26.
3. Loffeld R, Putten A, Balk A. Changes in the localization of colorectal cancer: implications for clinical practice. ***J Gastroenterol Hepatol*** 1996; 11: 47-50.
4. Ji BT, Devesa SS, Chow WH, Jin F, Gao YT. Colorectal incidence trends by subsite in urban Shangai, 1972-1974. ***Cancer Epidemiol Biomarkers Prev*** 1998; 7: 661-666.
5. Miller A, Gorska M, Bassett M. Proximal shift of colorectal cancer in the Australian Capital Territory over 20 years. ***Aust N Z J Med*** 2000; 30: 221-225.
6. Cucino C, Buchner A, Sonnenberg A. Continued rightward shift of colorectal cancer. ***Dis Colon Rectum*** 2002; 45: 1035-1040.
7. Sherma VK, Vasudeva R, Howden CW. Changes in colorectal cancer over a 15-year period in a single United States city. ***Am J Gastroenterol*** 2000; 85: 3615-3619.
8. Mokhtar N. Cancer pathology registry 1985-1989. National Cancer Institute, Cairo; Al Asdekaa Press. 1991.
9. Parkin DM, Pisani P, Ferlay J. Estimates of the worldwide incidence of eighteen major cancers in 1985. ***Int J Cancer*** 1993; 54: 594-606.
10. Keighley MR, Williams NS. Surgery of the anus, rectum and colon. Philadelphia (PA): WB Saunders, 1993. p. 830-885.
11. Duke's CE. The classification of cancer of rectum. ***J Pathol*** 1932; 35: 323-332.
12. Cummins ER, Vick KD, Poole GV. Incurable colorectal carcinoma: the role of surgical palliation. ***Am Surg*** 2004; 70: 433-437.
13. Abou-Zeid A, Khafagy W, Marzouk DM, Alaa A, Mostafa I, Ela MA. Colorectal cancer in Egypt. ***Dis Colon Rectum*** 2002; 45: 1255-1260.
14. Soliman AS, Bondy ML, Levin B. Colorectal cancer in Egyptian patients under 40 years of age. ***Int J Cancer*** 1997; 71: 26-30.
15. Cancer Incidence Report, National Cancer Registry, Ministry of Health, Kingdom of Saudi Arabia. 1997-1998. p. 46.
16. Cancer Incidence Report, 1999-2000. National Cancer Registry, Ministry of Health, Kingdom of Saudi Arabia. 2004.
17. Winawer SJ, Fletcher RH, Miller L. Colorectal cancer screening: clinical guidelines and rationale. ***Gastroenterology*** 1997; 112: 594-642.
18. Mostafa G, Matthews BD, Norton HJ, Kercher KW, Sing RF, Heniford BT. Influence of demographics on colorectal cancer. ***Am Surg*** 2004; 70: 259-264.
19. National Cancer Institute. Cancer statistics review 1973-1987. Bathesda, MD: NCI Publications (NIH); 1990. p. 90-2789.
20. Butcher D, Hassanein K, Dudgeon M, Rhodes J, Holmes FF. Female gender is a major determinant of changing subsite distribution of colorectal cancer with age. ***Cancer*** 1985; 56: 714-716.
21. Rex DK, Khan AM, Shah P. Screening colonoscopy in asymptomatic average-risk African Americans. ***Gastrointest Endosc*** 2000; 51: 524-527.
22. Demers RY, Severson RK, Schottenfeld D, Lazar L. Incidence of colorectal adenocarcinoma by anatomic subsite. An epidemiologic study of time trends and racial differences in the Detroit, Michigan area. ***Cancer*** 1997; 79: 441-447.
23. Vobecky J, Leduc C, Devroede G. Sex differences in the changing anatomic distribution of colorectal carcinoma. ***Cancer*** 1984; 54: 3065-3069.
24. Ponz DLM, Sacchetti C, Sassatelli R, Zanghieri G, Roncucci L, Scalmati A. Evidence for the existence of different types of large bowel tumors: Suggestions from clinical data of a population-based registry. ***J Surg Oncol*** 1990; 44: 35-43.
25. Leiberman DA, Weiss DG, Bong JH. Use of colonoscopy to screen asymptomatic adults for colorectal cancer. ***N Engl J Med*** 2003; 343: 162-168.
26. West DW, Slattery ML, Robisol LM. Dietary intake and colon cancer: sex and anatomic site-specific associations. ***Am J Epidemiol*** 1989; 130: 883-894.