

The Analysis Of Our Colon Cancer Patients According To The Tumor Localization

Tümör Lokalizasyonuna Göre Kolon Kanserli Olgularımızın Analizi

Yavuz OZDEMİR, MD

*Specialist of General Surgery
GATA Haydarpasa Education Hospital,
Department of General Surgery*

İlker SUCULLU, MD

*Assistant Professor of General Surgery
GATA Haydarpasa Education Hospital,
Department of General Surgery*

Ali İlker FILİZ , MD

*Assistant Professor of General Surgery
GATA Haydarpasa Education Hospital,
Department of General Surgery*

Ergün YUCEL, MD

*Specialist of General Surgery
GATA Haydarpasa Education Hospital,
Department of General Surgery*

Kamer DERE, MD

*Assistant Professor of Anesthesiology
and Reanimation
GATA Haydarpasa Education Hospital,
Department of Anesthesiology and Reanimation*

Yavuz KURT, MD

*Associate Professor of General Surgery
GATA Haydarpasa Education Hospital,
Department of General Surgery*

Sezai DEMIRBAS, MD

*Associate Professor of General Surgery
GATA Division of General Surgery*

M.Levhi AKIN, MD

*Professor
GATA Haydarpasa Education Hospital,
Department of General Surgery*

Corresponding Author

Yavuz OZDEMİR

*GATA Haydarpasa Education Hospital, Department of
General Surgery
Uskudar/ISTANBUL
E-mail: dryozdemir@yahoo.com*

ABSTRACT

Background

Although the incidence of proximal colon cancers has been increasing in last 3 decades, the effect of tumor localization on survival is controversial. In this study we aimed to evaluate the characteristic and survival analysis of colon cancer patients according to the tumor localization (right and left sided), whom have been treated and followed at Gülhane Military Medical Academy Haydarpasa Training Hospital Department of General Surgery between January 1994 and May 2008.

Methods

A total of 221 patients was included to study. Tumors occurring from cecum to splenic flexure were classified as right colonic tumor, and tumors occurring from splenic flexure to rectosigmoid junction were included in left colon tumors. Clinical and pathological parameters were analyzed and Kaplan-Meier method was used for calculating survival rates according to the tumor localization.

Results

There were 93 patients in right colon cancer group and 128 in the other group. There was no statistically significant difference between two groups regarding age, gender, grade and stage of the tumor, number of metastatic lymph nodes, tumor size and distant metastasis. The difference between number of lymph nodes and localization of tumor was statistically significant between groups ($p=0,031$). There was no significant correlation between overall survival, disease free survival and tumor localization.

Conclusion

The tumor of our colon cancer patients was localized at right side of the colon in 42% and at left side of the colon in 58%. Localization of the tumor is not a prognostic factor according to our study.

Key Words: *Colon cancer, Survival, Tumor localization, Disease free survival*

ÖZET

Amaç

Son 3 dekatta proksimal yerleşimli kolon kanser insidansı artmakla beraber tümör lokalizasyonunun sağkalım üzerine etkisi tartışmalıdır. Bu çalışmada tümörün yerleşim yerine göre sağkalım sonuçlarını karşılaştırmayı amaçladık.

Gereç ve Yöntem

GATA Haydarpaşa Eğitim Hastanesi Genel Cerrahi servisinde 1994-1998 yılları arasında kolon kanseri nedeni ile tedavi ve takip edilen 221 hasta çalışmaya alındı. Çekumdan transvers kolona kadar olan kısımdaki tümörler sağ kolon, splenik fleksuradan sigmoid kolona kadar olan kısımdaki tümörler sol kolon tümörleri olarak sınıflandırıldı. Klinik ve patolojik parametreler ki-kare testi ile, devamlı değişkenler Student's t-test ile değerlendirildi. Sağkalım oranlarının değerlendirilmesinde Kaplan-Meier metodu, sağkalım oranlarındaki farkın değerlendirilmesinde log-rank testi kullanıldı.

Bulgular

Sağ kolon grubunda 93, sol kolon grubunda 128 hasta mevcuttu. Yaş, cinsiyet, tümörün diferansiasyon derecesi ve evresi, metastatik lenf nodu sayısı, tümör çapı ve uzak organ metastazı açısından yapılan değerlendirmede istatistiksel olarak anlamlı bir sonuç saptanmadı. Toplam çıkarılan lenf nodu sayısı analiz edildi ve tümör lokalizasyonu açısından istatistiksel olarak anlamlı bir sonuç elde edildi ($p=0,031$). Toplam sağkalım ve hastalıksız sağkalım farkı anlamlı değildi.

Sonuç

Kolon kanserli olgularımızın %42'sinin tümörü sağ kolon yerleşimli iken %58'inin tümörü sol kolon yerleşimli idi. Tümör lokalizasyonu bizim çalışmamızda prognoz üzerine etkili bir faktör olarak bulunmamıştır.

Anahtar Sözcükler: *Kolon kanseri, sağkalım, sağ, sol.*

INTRODUCTION

Colon cancer is the third most common cancer with rectal cancer among both gender in the world (1,2). According to the 2008 statistics of American Cancer Society, colorectal cancer is the third leading cause of cancer death in females and males (1). Approximately two third of the colorectal cancer is colon cancer.

On the contrary to classically known, the increasing percentage of proximal colon cancers over the last 30 years have been described in several studies. The reason for this difference in distribution of colon cancer remains obscure. The growing use of colonoscopy and screening seem noteworthy to explain this change (3,4,5,6).

The right colon arises from the midgut and the left colon arises from the hindgut embryologically. In addition to the embryological difference, genetic studies revealed differential gene expression patterns at pathogenesis of proximal and distal colons (7,8). However, there is a conflict about the effect of tumor localization on prognosis.

We aimed to evaluate the characteristic and survival analysis of colon cancer patients according to the tumor localization (right and left sided), whom have been treated and followed at our service.

MATERIALS AND METHODS

A total of 221 patients diagnosed as colon cancer and treated at Gülhane Military Medical Academy Haydarpaşa Training

Hospital Department of General Surgery between January 1994 and May 2008, included into the study.

The clinicopathologic parameters studied were age, gender, grade, stage, distant metastasis, number of total and metastatic lymph nodes and size of the tumor. Tumors of cecum, ascending colon and transvers colon included in right sided tumor group and tumors of splenic flexura, descending colon, sigmoid colon in left sided tumor group.

Parameters obtained from hospital registry, operation notes and pathology reports, and these parameters recorded into our clinics Colon and Rectum Cancer Patients Database. A total of 347 patients were recorded in this database, 126 rectal cancer patients excluded remaining 221 colon cancers.

Primary tumors were staged according to the fifth edition of TNM staging system of the American Joint Committee on Cancer (9). The grade of the tumor, size of the tumor, the nodal status and the existence of distant metastasis were determined by the examination of the pathology reports and review of the hospital registry. These records were also used for to determine the anatomic localization of the tumor.

All data were analyzed by using SPSS (Statistical Package for Social Sciences) for Windows 16.0 software (Chicago, USA). Clinical and pathological parameters compared with χ^2 test, and continues data analyzed with Student's t-test. The cumulative survival rates were calculated by the Kaplan-Meier method and the differences in survival rates were analyzed by log-rank test. The value of $p < 0,05$ was considered to be statistically significant.

RESULTS

The study group consisted of 221 patients, 85 women and 136 men. The mean age of the patients was $70,3 \pm 13,4$ (24-99 years).

Patients were divided into two groups according to the localization of the tumor. There were 93 patients, 36 women and 57 men in right sided colon cancer group (Group 1), and 128 patients, 49 women and 79 men in left sided colon cancer group (Group 2). Clinicopathologic characteristics of the groups were summarized in table 1. According to the age, there was no statistically significant difference ($p > 0,05$), but the patients in Group 1 were relatively younger than Group 2. There was also no statistically significant difference in gender between the groups ($p > 0,05$).

At the evaluation of the tumor stage, the biggest proportion of the Group 1 was in stage III (47 patients, %36,7), and Group 2 was in stage II (30 patients, %32,3). There was no statistically significant difference in tumor stage between the groups ($p > 0,05$).

The total number of dissected lymph nodes were analyzed and a statistically significant difference between the groups were detected ($p = 0,031$). But the comparison of the involved lymph nodes was not significant ($p > 0,05$).

Additionally, there was no statistically significant difference in the parameters consisting distant metastasis, tumor size and tumor grade between the groups ($p > 0,05$). The median follow up period was $45,3 \pm 4,2$ months in Group 1 and $53,5 \pm 3,7$ months in Group 2. Five year survival rate in groups was 76,9% and 80,6%, respectively. There was no statistically significant difference in median overall survival rate ($p > 0,05$). When the two groups compared for each stage there was no statistically significant difference also ($p > 0,05$). The median disease free survival was $43,2 \pm 4,2$ months in Group 1, $51,9 \pm 3,7$ months in Group 2 and there was no statistically significant difference between the groups ($p > 0,05$).

Table-1: Clinical features of patients with right- versus left-sided colon cancer

		Right sided colon cancer n=93	Left sided colon cancer n=128
Age		69,5 ± 14,1	70,9 ± 12,9
Gender	Female	36 (38,7%)	49 (38,3%)
	Male	57 (61,3%)	79 (61,7%)
Grade	1	14 (15%)	15 (11,7%)
	2	64 (68,8%)	97 (75,7%)
	3	15 (16,2%)	16 (12,6%)
Stage	I	20 (21,5%)	20 (15,6%)
	II	27 (29%)	47 (36,7%)
	III	30 (32,3%)	32 (25%)
	IV	16 (17,2%)	29 (22,7%)
Involved LN		1,8 ± 0,3	1,1 ± 0,2
Total LN		14 ± 1,2	10,1 ± 0,7
Tumor size (cm)		5,5 ± 0,2	4,9 ± 0,1
Distant Metastasis		15 (16,1%)	26 (20,3%)

DISCUSSION

The increased incidence of proximally placed colon cancers has been shown in several recent studies. Forty two percent of colon cancer cases which were recorded at our database was right sided and 58% was left sided.

The frequency of right-sided colon cancer was higher in elderly patients. The possible explanations about the relationship between the proximal shift of colon cancers and age; have been reported in some trials and some causes were specified which included different biological mechanism of tumor development, late symptoms, and relatively short transit time (10,11). However, the median age of right sided colon cancer patients were found moreover than left sided in this study.

Several studies investigated the gender as a factor which effects the tumor localization. Svensson et al. sought the Cancer Registry of Norway and reported

that left sided colon cancer was seen in males more frequently whereas right sided in female (12). On the other hand, no difference between the gender has also been reported (13). We could not determine the relationship between the gender and tumor localization.

Meguid et al. studied the effects of grade, stage, lymph node status, tumor size in addition to above parameters for the localization of the tumor, and obtained remarkable findings. The ratio of Grade 3 tumor in right sided and in left sided colon cancers was 24,5% and 13,5%, respectively. They were also reported that stage I cancer ratio was less, stage III cancer ratio was high in right sided colon cancer group than left sided colon cancer group according to their study. Moreover dissected number of lymph nodes, involved number of lymph nodes and the size of the tumor were found higher in right sided colon cancers (14). Another study conducted by Nawa et al. revealed

that stage and grade of the right sided tumor was significantly higher than left sided tumor (15). Lymph node evaluation in colorectal cancers studied by Baxter and colleagues and they found that higher number of lymph nodes dissected at right sided colon cancer patients (16). We could not achieve significant results according to the size of the tumor, grade and involved lymph node status, but the number of dissected lenf node was statistically significant ($p=0,031$). According to the stage of the tumor, the biggest subgroup was stage III (32,3%) in right sided colon cancer and stage II (47%) in left sided colon cancer.

CONCLUSION

The ratio of right sided colon cancer patients was found 42% and left sided colon cancer patients was 58% in our clinic. However there was no statistically significant difference in overall survival according to the tumor localization. The number of dissected lymph nodes was significant in right sided colon cancer patients, whereas involved lymph node status, age, gender, grade and stage of tumor, distant metastasis and tumor size had no statistical importance.

REFERENCES

- 1)Jemal A, Siegel R, Ward E, et al. Cancer statistics. *CA Cancer J Clin* 2008;58:71-96.
- 2)Read TE, Kodner IJ, Colorectal cancer; risk factors and recommendations for early detection. *Am Fam Physician*; 1999; 59(11); 3083-92.
- 3)Beart RW, Melton LJ, Maruta M, Dockerty MM, Frydenberg HB, O'Fallon WM. Trends in right- and left-sided colon cancer. *Dis Colon Rectum* 1983;26:393-8.
- 4)Kee F, Wilson RH, Gilliland R, Sloan JM, Rowlands BJ, Moorehead RJ. Changing site distribution of colorectal cancer. *Br Med J* 1992;305:158.
- 5)Devesa S, Chow WO. Variation in colorectal cancer incidence in the United States by subsite of origin. *Cancer* 1993;71:3819-26.
- 6)Slattery ML, Friedman GD, Potter JD, Edwards SE, Bette JC, Samowitz W. A description of age, sex, and site distributions of colon carcinoma in three geographic areas. *Cancer* 1996;78:1666-70.
- 7)Glebov OK, Rodriguez LM, Nakahara K, Jenkins J, Clatt J, Humbyrd CJ et al. Distinguishing Right from Left Colon by the Pattern of Gene Expression. *Cancer Epidemiology, Biomarkers & Prev.* 2003;12:755-762.
- 8)Birkenkamp-Demtroder K, Olesen SH, Sørensen FB, et al. Differential gene expression in colon cancer of the caecum versus the sigmoid and rectosigmoid. *Gut* 2005;54(3):374-84.
- 9)Compton CC, Greene FL; The Staging of Colorectal Cancer: 2004 and Beyond; *CA Cancer J Clin.*;54(6):295-308, 2004.
- 10)Ikeda Y, Koyanagi N, Mori M, Ezaki T, Toyomasu T, Minagawa S, et al. Increased Incidence of Proximal Colon Cancer in the Elderly. *J Clin Gastroen.* 1996;23(2):105-108.
- 11)Sarli L, Michiara M, Sgargi P, Jusco D, De Lisi V, Leonardi F, et al. The changing distribution and survival of colorectal carcinoma: an epidemiological study in an area of northern Italy. *Eur J Gastroenterolo Hepatol* 2005;17:567-72.
- 12)Svensson E, Grotmol T, Hoff G, Langmark F, Norstein J, Tretli S, et al. Trends in colorectal cancer incidence in Norway by gender and anatomic site: an age-period-cohort analysis. *Eur J Cancer Preven* 2002;11(5):489-495.
- 13)Cooper GS, Yuan Z, Landefeld CS, Johanson JF, Rimm AA. A national population-based study of incidence of colorectal cancer and age. Implications for screening in older Americans. *Cancer* 1995;75(3):775-81.
- 14)Meguid RA, Slidell MB, Wolfgang CL, Chang DC, Ahuja N, et al. Is there a difference in survival between right- versus left-sided colon cancers? *Ann Surg Oncol.* 2008;15(9):2388-94.
- 15)Nawa T, Kato J, Kawamoto H, Okada H, Yamamoto H, Kohno H, et al. Differences between right- and left-sided colon cancer in patient characteristics, cancer morphology and histology. *J Gastroenterol Hepatol.*2008;23:418-23.
- 16)Baxter NN, Virnig DJ, Rothenberger DA, Morris AM, Jessurun J, Virnig BA, et al. Lymph node evaluation in colorectal cancer patients: A population-based study. *J Natl Cancer Inst.* 2005;97(3):219-25.