The Incidence of Pericolonic Tumor Deposits in Colorectal Cancer

Kolorektal Kanserlerde Perikolonik Tümör Depozitlerinin Sıklığı

Orhan Alimoglu[1], Tunc Eren[1], Kerem Tolan[2], Ali Kilic[2], Tamador Shamaileh[3], Gurhan Bas[2]

[1] Istanbul Medeniyet University, School of Medicine, Department of General Surgery
[2] Istanbul Umraniye Training & Research Hospital, Department of General Surgery
[3] The University of Jordan, School of Medicine, Department of General Surgery

Özet

Amaç: Güncel olarak, hastalar arasında prognostik farklılıkları değerlendirmek için Amerikan Kanser Ortak Komitesi (American Joint Committee on Cancer—AJCC) tarafından geliştirilen Tümör-Nodül-Metastaz (TNM) Evreleme Sistemi kullanılmaktadır. Amacımız kolorektal kanser nedeniyle ameliyat olan hastalarda perikolonik tümör depozitlerinin görülme sıklığını değerlendirmek ve tümör evreleri ile ilişkisini göstermektir.

Gereç ve Yöntemler: Kolorektal kanser için cerrahi rezeksiyon yapılan toplam 190 hastanın patolojik bulguları retrospektif olarak değerlendirildi. Evreleme, Amerikan Kanser Ortak Komitesi kanser evreleme kılavuzunun yedinci edisyonuna uygun olarak gerçekleştirildi.

Bulgular: 190 kolorektal kanserli hastanın 30'unda (%15,8) perikolonik tümör depoziti saptandı. Patoloji sonuçlarına göre hastaların %66,6'sı T3, %46,6'sı ise N1c evresinde idi. Ayrıca %56,6 olgu Evre IIIB olarak rapor edildi.

Tartışma ve Sonuç: Lenf nodu tutulumunun diğer kanıtları yok ise perikolonik tümör depozitlerinin varlığı hastalığın Evre II'den Evre III'e yeniden sınıflandırılmasını sağlar. Evre III'teki hastalarda adjuvan tedavi gerekmesi nedeniyle tümör depozitlerinin varlığından dolayı ortaya çıkan üst evreye kayma önemlidir.

Anahtar Sözcükler: kolorektal kanser; cerrahi; tümör depozitleri; insidans; evreleme

Abstract

Aim: Currently, the primary method for assessing the prognostic differences among patients is the tumor-node-metastasis (TNM) staging system developed by the American Joint Committee on Cancer (AJCC). Our aim was to evaluate the incidence of the presence of pericolonic tumor deposits in patients operated on for colorectal cancer, and to demonstrate its relation with tumor stages.

Materials and Methods: The pathological findings of a total number of 190 patients who underwent surgical resections for colorectal cancer were evaluated retrospectively. Staging was carried out according to the 7th edition of the AJCC staging manual.

Results: Among all 190 colorectal cancer patients, a total of 30 (15.8%) patients were detected to harbor pericolonic tumor deposits. In the final pathology reports, 66.6% of the patients were reported as T3, and 46.6% were reported as N1c. Thus, 56.6% of the patients were reported as Stage IIIB.

Discussion and Conclusion: In the absence of other evidence of lymph node involvement, the presence of pericolonic tumor deposits results in the reclassification of the disease from Stage II to Stage III. The fact that Stage III disease necessitates adjuvant treatment puts forth an emphasis on the importance of upstaging due to the presence of tumor deposits.

Keywords: colorectal cancer; surgery; tumor deposits; incidence; staging

Geliş Tarihi /*Received* : 14.12.2015
Kabul Tarihi /*Accepted*: 12.05.2016

Sorumlu Yazar/*Corresponding Author*
Orhan Alimoglu, MD, Prof.
Istanbul Medeniyet University,
Goztepe Training & Research Hospital,
Dr. Erkin Street, Goztepe, Kadikoy,
34730 Istanbul / Turkey
E-mail: orhan.alimoglu@medeniyet.edu.tr

INTRODUCTION

Colorectal cancer (CRC) is the third most common cancer worldwide and accounts for 10% of all new cancer diagnoses (1). Currently, the primary method for assessing the prognostic differences among patients is the "Tumor-Node-Metastasis (TNM) Staging System", developed by the American Joint Committee on Cancer (AJCC) and the International Union Against Cancer (UICC) (2). The treatment modalities, and decisions are based on this classification. Pericolonic Tumor Deposits (PTDs) are found in the pericolonic and rectal mesenteric adipose tissue around primary colorectal cancer mass lesions. Tumor deposits (TDs) in the pericolonic and mesorectal fat have been recognized since 1935, when they were first attributed to vascular invasion (3). These lesions are palpable and grossly similar to small lymph nodes. The microscopic features of PTDs are that they are discontinuous adenocarcinoma foci found in the fibroadipose and desmoplastic tissues not associated with a lymph node (4). Before TNM5, which was the 5th edition published in 1997, pericolonic and perirectal isolated TDs were not classified as positive lymph nodes, regardless of their size and shape, but were classified in the pathological tumor (T) category as pT3 (5). In TNM5, the "3 mm rule" was introduced, which states that any mesocolic or mesorectal tumor deposit of 3 mm in size or more should be considered as an involved lymph node (6). In the absence of other evidences of lymph node involvement, this rule resulted in the reclassification of the disease from Stage II, for which adjuvant treatment is not indicated routinely, to Stage III, for which it is. However, the "3 mm rule" was not introduced on the basis of trial data, but on the basis of unsubstantiated, unpublished work (7). In TNM6, the current edition that was published in 2002, the "3 mm rule" was withdrawn. In this edition, the TDs without any evidence of a residual lymph node is classified in the pathological node (N) category when the nodule has the "form and the smooth contour of a lymph node" (8). This contour rule also lacks support from clinical evidence. When it comes to the incidence of PTDs, there are only single-center studies reported, and the percentages vary from 4.5% to 45% of cases for rectal cancer, and from 17.6% to 25.5% for colon cancer (9,10). Our aim was to evaluate the incidence of the presence of TDs in patients operated on for colorectal cancer, and to demonstrate its relation with tumor stages.

MATERIALS AND METHODS

A total number of 190 patients having undergone surgical resections for colorectal cancer (CRC) between 2010 and 2013 were retrospectively evaluated. The information for each patient revealing the date of birth, date of surgery, elective or emergency surgery (because of the possibility of bowel obstruction and/or perforation), location of the primary tumor (caecum, ascending colon, transverse colon, descending colon, sigmoid colon, rectosigmoid colon, rectum) were recorded as demographic and surgical parameters. Information on pathological variables was obtained from the histopathology reports. Tumor stage was classified according to the 7th edition of the American Joint Committee on Cancer (AJCC) colon and rectum cancer staging system. Data revealing the tumor size, tumor and nodal stage, number of total nodes examined, presence of isolated TDs were also recorded as pathological parameters.

RESULTS

Among all 190 CRC patients, a total of 30 (15.8%) patients were detected to harbor TDs. 18 of these patients were women (60%), whereas 12 were men (40%), and the mean age was calculated to be 52.6 (range: 38–89) (Table 1). When the types of the tumors were classified according to their locations in the colon, it was found that 11 of them were in the sigmoid colon, 6 in the rectum, 7 in the rectosigmoid colon, 4 in the caecum, 1 in the ascending colon, and 1 in the splenic flexure. A total of 654 lymph nodes were harvested in the operations, and were reported at the final pathology reports. One hundred and thirty-six lymph nodes were detected to be metastatic in the specimens. The mean number of harvested lymph nodes per patient was 21.86 (range: 12–63). In concern of the final pathology reports, 66.6% of the patients were reported as T3, and 46.6% were reported as N1c. Of the patients 56.6% were reported as Stage IIIB according to the 7th edition of the AJCC (Table 1).

Table 1. Demographics and pathological stages according to the AJCC, 7th edition

Demographic Data		
Age	(mean)	52.6 (range: 38–89)
Gender	Female	60% (n=18)
	Male	40% (n=12)
	Pathological stages (AJCC 7th edition)	
Stage		**n**
III A		1
III B		17
III C		6
IV A		4
IV B		2

DISCUSSION AND CONCLUSION

One can speculate about the origin of tumor deposits (TDs). They might be derived from the growing primary tumor, or along the lymphatic or vascular structures or nerves. Some TDs may be lymph node metastases, in which the pre-existing node is no longer recognizable. Strong correlations have been demonstrated between the presence or number of TDs and intramural vascular invasion, extramural vascular invasion, perineural invasion, lymphatic invasion and lymph node metastases (11). Ueno et al. demonstrated that the incidence of TDs is higher in cases with extracapsular growth of lymph node metastases, compared with cases with lymph node metastases with an intact capsule (12). In 1935, Gabriel et al. noted the existence of PTDs for the first time, and concluded that these structures form as a result of vascular tumoral dissemination (3). The microscopic features of PTDs show that they are discontinuous adenocarcinoma found in the fibroadipose and desmoplastic tissues not associated with a lymph node (4). Some authors suggested that the number and diameter of the TDs are highly associated with the survival of the patients (13). As well known, the overall and disease-free survival rates of the patients are in close relation with the stage of the disease. In the absence of other evidence of lymph node involvement, the presence of TDs results in the reclassification of the disease from Stage II to Stage III, and this upstaging brings up the indication for adjuvant treatment. In their study of 870 CRC patients, Belt et al. reported that because of the high risk of disease recurrence, all node-negative Stage II patients with isolated TDs, regardless of size and shape, should be classified as Stage III, for whom adjuvant chemotherapy should be considered (14). Harrison et al. reported that the presence of PTDs is an independent predictor for survival in patients with caecal and ascending colon adenocarcinoma (9). When it comes to the incidence of PTDs, the percentages vary from 4.5% to 45% of cases in the rectum, and from 17.6% to 25.5% in the colon (9,10). In our study, the tumor deposit incidence was found to be 15%. Strong correlations have been demonstrated between the presence and number of TDs and intramural vascular invasion, extramural vascular invasion, perineural invasion, lymphatic invasion and lymph node metastases (11). Ueno et al. demonstrated that the incidence of TDs was higher in cases with extracapsular growth of the lymph node metastases, compared with cases having metastatic lymph nodes with an intact capsule (12). Our low number of cases, and not having long term results in concern of survival, constitute the drawbacks of our study. The follow-ups of the patients will be continued in the following 5 years in order to evaluate the long-term results to find out the prognostic effects of the presence of TDs in colorectal cancer.

In the absence of other evidence of lymph node involvement, the presence of pericolonic tumor deposits results in the reclassification of the disease from Stage II to Stage III. The fact that Stage III disease necessitates adjuvant treatment, puts forth an emphasis on the importance of upstaging due to the presence of tumor deposits. Further studies are needed to investigate the significance of this entity, and its prognostic effects in colorectal cancer patients.

REFERENCES

1. Global Burden of Disease Cancer Collaboration. The Global Burden of Cancer 2013. JAMA Oncol. 2015;1(4):505–27.
2. American Joint Committee on Cancer. Manual for Staging of Cancer. Philadelphia: Lippincott-Raven; 1998.
3. Gabriel WB, Dukes CE, Bussy HJR. Lymphatic spread in cancer of the rectum. Br J Surg. 1935;23(90):395–413.
4. Jass JR, Morson BC. Reporting colorectal cancer. J Clin Pathol. 1987;40:1016–23.

5. Hermanek P, Sobin LH, International Union Against Cancer (UICC). TNM Classification of Malignant Tumors. 4th ed. New York: Springer-Verlag; 1987.
6. Sobin LH, Wittekind CH. International Union Against Cancer (UICC). TNM Classification of Malignant Tumors, 5th ed. New York: Wiley-Liss Publications; 1997.
7. Nagtegaal ID, Quirke P. Colorectal tumour deposits in the mesorectum and pericolon; a critical review. Histopathology. 2007;51(2):141–9.
8. Sobin LH, Wittekind CH, International Union Against Cancer (UICC). TNM Classification of Malignant Tumors, 6th ed. New York: Wiley-Liss Publications; 2002.
9. Harrison JC, Dean PJ, el-Zeky F, Vander ZR. From Dukes through Jass: pathological prognostic indicators in rectal cancer. Hum Pathol. 1994;25(5):498–505.
10. Tateishi S, Arima S, Futami K, Kawahara K, Tachikawa D, Naritomi K, et al. A clinicopathological investigation of "tumor nodules" in colorectal cancer. Surg Today. 2005;35(5):377–84.
11. Prabhudesai A, Arif S, Finlayson CJ, Kumar D. Impact of microscopic extranodal tumor deposits on the outcome of patients with rectal cancer. Dis Colon Rectum. 2003;46(11):1531–37.
12. Ueno H, Mochizuki H, Tamakuma S. Prognostic significance of extranodal microscopic foci discontinuous with primary lesion in rectal cancer. Dis Colon Rectum. 1998;41(1):55–61.
13. Ueno H, Mochizuki H. Clinical significance of extrabowel skipped cancer infiltration in rectal cancer. Surg Today. 1997;27(7):617–22.
14. Belt EJ, van Stijn MF, Bril H, de Lange-de Klerk ES, Meijer GA, Meijer S, et al. Lymph node negative colorectal cancers with isolated tumor deposits should be classified and treated as stage III. Ann Surg Oncol. 2010;17(12):3203-11.