

Prevalence of Colorectal Cancer Recurrence in Patients Undergoing Surgical Procedures in Educational Hospitals Affiliated with Ahvaz Jundishapur University of Medical Sciences During 1997-2007

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ABSTRACT

Colorectal cancer has been shown to be the second main reason for the deaths of cancer. 20 to 40 percent of the patients suffering from the disease recurrence have the salvage surgery. In this study we investigate the rate and the process of the colorectal cancer recurrence on the patients who are put under surgery. This study is a retrospective research based on available data. The records of 207 patients with colorectal cancer, who had been put under surgery operation in the hospitals of Ahvaz Jundishapur University of Medical Sciences from the early 1997 to 2007 were examined, the available variables were studied and the collected data were statistically analyzed. Of the 207 patients examined, 92 patients (%44.5) had recurrent cancer. Among the 92 patients with recurrent cancer, 53 patients (%57.6) were females and 39 patients (%42.4) were males, showing that the recurrence ratio in both genders had no significant difference (p-value= 0.43). 47 patients (%51.1) had colon cancer and 45 cases (%48.9) were suffering from rectal cancer, showing that the ratio of cancer recurrence in both diseases had no significant difference (P-value= 0.59). 33 patients (%36) were in stage II and 59 cases (%64) were in stage III, and it was observed that there is a significant difference between the recurrence rate in stage III and that in stage II (P-Value= 0.04). Adjuvant therapy in rectal cancer reduces recurrence to such a large extent that there was a significant difference between those who had received this therapy type and those who had not (P-value= 0.001). However, no significant difference was observed between the two groups of patients with colon cancer who had and had not received Adjuvant therapy (P-value= 0.07). Being in a more developed stage of disease increases the rate of cancer recurrence and the most common organ for recurrence was the metastasis to the liver. In this study, adjuvant therapy decreases recurrence of the rectal cancer, but not that of the colon cancer.

Key words: Colorectal cancer, Surgery, Radiotherapy, Chemotherapy, Recurrence

INTRODUCTION

As a common but preventable disease, colorectal cancer has attracted the attention of the health centers throughout the world. This type of cancer is indeed the second cause of cancer deaths and in most cases occurs in western countries as isolated colon cancer at the age of 50.

According to statistics, this disease is increasing in countries and is prevalent as one of the most important types of cancer for both males and females, affecting the two genders equally.

The liver is the most frequent site of colon cancer metastasis for which the local recurrence is relatively uncommon, unlike rectal cancer, which

has the most common type of local recurrence¹. The incidence of this disease has decreased in the United States for men and women with an average of 2.8% and 2.2% respectively since 1998. Since 1992, it has generally had a 1.5-percent decrease for the men of 20 to 49 years old and a 1.6-percent decrease for the women of the same ages². Those who are treated for colorectal cancer once are exposed to the recurrent disease (whether local or systemic) or metachronous (another initial tumor). In theory, regular colonoscopy after the surgery for polyps diagnosis and removal prevents from metachronous cancer. The optimal method of following up the patients suffering from recurrent cancer is a contested issue. The main goal of patient follow-up is to track resectable recurrence and increase the patient's survival.

The re-resection of local recurrence and resection of distant metastasis to the liver, lung or other parts are often technically difficult and complicated, and there is but little hope for access to long survival; therefore, only those selected patients who can tolerate such an approach should be closely followed up. Since in most cases recurrence happens after two years of early detection of the disease, follow-up should also be done during this period. While close follow-up increases the possibility of tracking the cases of resectable recurrence, its effect on the patients' increased survival has not been substantiated yet. 20-40 percent of the patients with colorectal cancer will finally be exposed to the disease recurrence after surgery operation. Most cases of recurrence happen within the first two years after the early diagnosis of the disease, but chemotherapy and radiotherapy after the surgery may delay the recurrence³⁻⁵. Although the majority of these patients return with distant metastases, only a small percentage of them will have isolated local recurrence and surgery will be resuscitative for them. The recurrence following the resection of colorectal cancer usually occurs locally inside the abdomen or in the liver or lungs⁶⁻⁹.

The studies conducted on colon cancer show that the liver is the most common site of metastasis and those done on rectal cancer have indicated local recurrence of this type of cancer⁶⁻⁸. The resection of the other parts involved may be

necessary. It may be more difficult to treat the recurrent rectal cancer due to its nearness to other pelvic structures. In cases of chemotherapy and radiotherapy for the patient, adjuvant therapy should be done prior to the resuscitative surgery operation¹¹.

In a study conducted by Yuang *et al.*, 213 patients with rectal cancer who had been operated on were examined in terms of the local recurrence rate, and the local recurrence was observed in 73 patients (34.27%) and the highest rate of recurrence occurred within the first three years after the surgery operation¹². Another study was done by A Four-arm Trial, cooperated by Gastrointestinal Tumor Study Group and examined in four separate groups 202 patients with rectal cancer, who had been put under surgery: the first group had received only radiotherapy, the second group had received only chemotherapy, the third group had combination therapy (both chemotherapy and radiotherapy), and the four group had received neither radiotherapy nor chemotherapy after their surgery operation. This study showed that the overall survival rate was higher for those who had combination therapy than the other groups. This group also had a lower recurrence rate than the other groups¹³. In a study carried out by the Surgery Department of Tokai Medical School in Japan on 418 patients (246 patients with colon cancer and 169 patients with rectal cancer) who had been put under surgery operation, the first site of recurrence, the distance to recurrence and the effect of chemotherapy and radiotherapy were investigated. The most common site of recurrence for colon cancer was recognized as the liver, while that for rectal cancer was recognized as local recurrence.

The DFS (disease-free survival) was measured as 26 months and 17 months in rectal cancer and colon cancer respectively. The DFS was also higher for the patients with chemotherapy and for those without this type of therapy and was shorter in Stage III than Stage II⁶.

In another study conducted by Kettering Cancer Center in New York, 593 patients who were suffering from rectal cancer and had been operated upon and then had received chemotherapy and radiotherapy were examined in terms of disease

recurrence. The average period of follow-up was 44 months and it was shown that recurrence had happened for 119 patients (20%). The lung was the most common site of recurrence (69%), liver had the second place (20%) and local recurrence had the third place (2.4%)¹⁴.

Kendal *et al.* also performed a study on the patients with colorectal cancer who had been operated upon in terms of local recurrence. It was observed at the end of a five-year follow-up that 4-18 percent of the patients with colon cancer, and 3-32 percent of those with rectal cancer will have locally recurrent cancer and 80-90 percent of patients with locally recurrent cancer will die within five years (8). Due to the high importance of recurrence in colorectal cancer and the lack of knowledge and detailed statistics regarding the process and rate of recurrence, we have tried in this research to have a better management to prevent from the recurrence of these diseases by reviewing the patients' records and determining treatment strategies at different stages of the diseases.

MATERIALS AND METHODS

This is a retrospective study conducted on medical records of patients with colorectal cancer who underwent surgery during 1997 to 2007 in the teaching hospitals affiliated with Ahvaz Jundishapur University of Medical Sciences. The collected data were analyzed with SPSS software using Chi-square test.

RESULTS

This study dealt with all records of the patients with colorectal cancer from 1997 up to the end of 2007. Only those patients who had records and complete information and who had been operated on were studied. 207 patients were studied, among whom 92 patients (44.5%) had recurrent cancer and 115 patients (55.5%) did not. 110 patients (53.4%) of the sample were suffering from colon cancer, while 97 patients (46.6%) had rectal cancer. The patients' age distribution is presented in Table 1:

The patients with and without cancer recurrence were classified in terms of age and gender (Tables 2 & 3).

Of the 47 patients with recurrent colon cancer, 23 patients (49%) were females and 24

Table 1: The total number of patients with colorectal cancer in terms of age

Age	Number	Percentage
20-30	9	4.34%
30-40	44	21.25%
40-50	60	28.98%
50-60	57	27.23%
60-70	23	11.11%
70-80	12	5.79%
80-90	2	0.96%
total	207	100%
	49.1	Age average

Table 2: The number of patients with and without cancer recurrence in terms of age

age	Number		Percentage	
	With recurrence	Without recurrence	With recurrence	Without recurrence
20-30	3	6	3.26%	5.21%
30-40	18	26	19.56%	22.60%
40-50	25	35	27.17%	30.43%
50-60	18	39	19.56%	33.91%
60-70	14	9	15.21%	7.82%
70-80	12	-	13.40%	-
80-90	2	-	2.10%	-
total	92	115	100%	100%

patients (51%) were males. Also, of the 45 patients with recurrent rectal cancer, 30 patients (66.6%) were females and 15 patients (33.4%) were males. The recurrence rate in the two genders had no statistically significant difference (P-value= 0.43). Among the 115 patients without recurrent cancer, 63 patients (54.8%) had colon cancer and 52 patients (45.2%) had rectal cancer. Of the 92 patients returning with recurrent cancer, 47 patients (51.1%) had colon cancer and 45 patients (48.9%) had rectal cancer, and there has been no significant

difference between the two types of cancer in terms of recurrence rate (P-value= 0.59). All of the patients who had no recurrence after the surgery operation received chemotherapy and radiotherapy if needed. Among the 47 patients with recurrent colon cancer, 44 patients (93.6%) received chemotherapy and only three of them (6.4%) did not receive that type of therapy.

Moreover, 35 patients (77.7%) of the 45 patients who had rectal cancer received

Table 3: The number of patients with and without cancer recurrence in terms of gender

Gender	Number		Percentage	
	With recurrence	Without recurrence	With recurrence	Without recurrence
Female	60	53	52.20%	57.60%
Male	55	39	47.80%	42.40%
Total	115	92	100%	100%

Table 4: The number of patients with recurrent colon and rectal cancers in terms of stage

Stage	Number		Percentage	
	colon cancer	rectal cancer	colon cancer	rectal cancer
II	11	22	23.40%	48.90%
III	36	23	76.60%	51.1%
total	47	45	100%	100%

Table 5: The recurrence process in colorectal cancer

The site of metastasis	Number (colon cancer, rectal cancer)	Percentage (colon cancer, rectal cancer)
Liver metastasis	33 (15,18)	35.86% (45.4%, 54.6%)
Abdominal metastasis	17 (12,5)	18.47% (70.6%, 29.04%)
Bone metastasis	8 (3,5)	8.69% (37.5, 62.5%)
Lung metastasis	5 (3,2)	5.43% (40%, 60%)
Metastasis to the small intestine	4 (0 , 4)	4.34% (100%, 0%)
Metastasis to the ovary	4 (1 , 3)	4.34% (25% , 75%)
Metastasis to the stomach	2 (2 , 0)	2.1% (0 , 100%)
Metastasis to the spleen	2 (2 , 0)	2.1% (0 , 100%)
Metastasis to the pancreas	1 (0 , 1)	1% (100%, 0)
Multi-organ metastasis	9 (5 , 4)	9.78% (55.5%, 44.5%)
Metastasis from rectum to colon	7 (0 , 7)	7.6% (0 , 100%)
total	92	100%

chemotherapy and radiotherapy, 6 patients (13.3%) received only chemotherapy, and 4 patients (9%) received no types of therapy after surgery. It was shown that Adjuvant therapy in rectal cancer reduces recurrence to such a large extent that there was a significant difference between those who had received this therapy type and those who had not (P-value= 0.001). However, no significant difference was observed between the two groups of patients with colon cancer who had and had not received adjuvant therapy (P-value= 0.07).

Furthermore, the patients who had recurrent cancer were classified in terms of the stage and type of the disease (Table 4). With regard to the subject of the study, the patients with cancer at Stage IV were first excluded from the study due to metastasis. Moreover, those in Stage I were not studied as they had no regular return, no complete follow-up after treatment and no sufficient registered information.

DISCUSSION

In the present study, 92 patients (44.5%) of the 207 patients under study had recurrent cancer, 51.1 percent (92 patients) of whom had colon cancer and 48.9 percent (45 patients) had rectal cancer. According to the study conducted by Sadahiro *et al.* in Japan, the recurrence rate for colorectal cancer was 40.23% (6). This rate was shown to be 60 percent by a study conducted by Shoup Morgo *et al.* during a ten-year interval beginning in 1990 (17). The recurrence rate was shown to be 25.23 percent by a study performed by Mohammadian Panah *et al.* in Shiraz on 83 patients with colorectal cancer (10). In this study, the most cases of recurrence were observed in the 5th and 6th decades of life and the average age of the patients with recurrent colorectal cancer was 52.5 years, with 50.11 years for rectal cancer and 54.14 years for colon cancer.

The female-male ratio in patients with recurrent cancer in this study was about 1.35, showing no statistically significant difference (P-value= 0.43). A review of the patients revealed that adjuvant therapy in rectal cancer reduces recurrence to such a large extent that there was a significant difference between those who had

received this therapy type and those who had not (P-value= 0.001). However, no significant difference was observed between the two groups of patients with colon cancer who had and had not received Adjuvant therapy (P-value= 0.07). Due to the small number of the sampled patients with recurrent cancer (92 patients) in this study, there is a need for another study to deal with the effect of adjuvant therapy on prevention from the recurrence of cancer in these patients. A study conducted by Boice *et al.* on the effect of chemotherapy and radiotherapy on the operated patients with rectal cancer showed that adjuvant therapy has increased the survival rate and decreased the recurrence rate in these patients¹⁹. It was also shown in this study that the recurrence rate will increase with an increase in the stage of the disease. Investigation of the recurrence rate during stages II and III showed that the recurrence rate is higher in Stage III than in Stage II (64% and 36% respectively) (P-value=0.04).

The prevalence of colorectal cancer for the two genders was shown to be equal and with no significant difference in this study (P-value= 0.43). It was also shown in this study that adjuvant therapy for patients suffering from rectal cancer also reduces the recurrence rate to a large extent (P-value= 0.001), whereas no significant difference was observed between the two groups of patients with colon cancer who had and had not received chemotherapy (P-value= 0.07). However, with regard to the 47 patients with recurrent colon cancer and the 45 patients with recurrent rectal cancer, it can be said that we need a larger number of sample to evaluate the effect of adjuvant therapy in reducing the recurrence rate and thus suggest that more studies be done for this purpose.

This study showed that the most cases of recurrent colorectal cancer have been liver metastases. Due to the fact that the patients' records were not complete enough and actually lacked the information needed, it is recommended that the patients' information (such as the disease pathology and surgery operation time) be registered in patients' records more accurately from now on. Moreover, due to the importance of the subject and that it has not been dealt with as it should, especially most of the previously performed studies have

investigated colorectal cancer rather than the rate and process of its recurrence, a more meticulous study is recommended to be carried out on the type of treatment and the recurrence process of this

disease to improve these patients' quality of life. Furthermore, findings of this study can be used to further development of new cancer treatment methods¹⁵.

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