Case Analysis

Colorectal Cancer in Younger than 30 Years Old Group is not Associated with Poor Prognosis

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Key Words
Clinicopathologic characteristics; Young adult colorectal cancer

Background. Many studies have investigated colorectal cancer in young patients, but there are widely conflicting data. It remains unclear whether colorectal cancer in younger than 30 years old adults is more aggressive than in older patients.
Methods. We reviewed the chart records of patients younger than 30 years old who were diagnosed with colorectal cancer and had received surgical resection of primary tumor with clear pathologic staging in our institution from Jan, 2002 to Dec, 2007. The data were then compared with those of 60-70 years old patients to determine the differences between the two groups. The variables included sex, early or advanced stage, tumor location, cell type, differentiation status, angiolymphatic and perineural invasion. Long-term survival was also compared between the two groups.
Results. Younger age was associated with an increased proportion of male patients ($p = 0.026$) initial presentation of tumor perforation ($p < 0.0001$), and extra-nodal invasion ($p = 0.031$). There were no statistically significant differences in pathologic staging between the two groups. No mucinous adenocarcinoma was identified in the younger group compared with 26 patients in the older group ($p = 0.168$). A stage-by-stage analysis revealed that survival in younger patients was no different compared with average-aged patients.
Conclusion. Patients younger than 30 years with colorectal cancer have clinicopathologic characteristics and stage at presentation similar to those of older patients.
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Colorectal cancer is the fourth most common cancer in men and the third most common cancer in women worldwide. Previous studies have reported rapid increases in colorectal cancer incidence rates in developing countries in many parts of the world, likely reflecting changing dietary and physical activity patterns. It is traditionally thought to be a disease of older patients with most being diagnosed after the age of 50 years.[1] The increased prevalence of colorectal cancer is due, in part, to the rise in the proportion of adult patients younger than 30 years with colorectal cancer over the past few decades. Although many studies have been conducted to investigate colorectal cancer in young patients, there is to date no clear consensus.

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Some studies have shown that colorectal cancer in young patients appears to be more aggressive, to present with later stage, and to have worse pathologic findings. However, young patients with early pathologic lesions have better overall 5-year survival rates if detected early. It remains unclear whether or not colorectal cancer in younger than 30 years old adults is more aggressive than that in older patients. The purpose of the current study was to compare the clinicopathologic characteristics between younger and older adults with colorectal cancer.

Materials and Methods

From January, 2002 to December, 2007, a total of 2180 patients were diagnosed with colorectal cancer in our hospital. The median age was 65 years. We reviewed the chart records of patients younger than 30 years old who were diagnosed with colorectal cancer and had received surgical resection of primary tumor with clear pathologic staging in our institution from January, 2002 to December, 2007, and compared them with those of 60-70-year-old patients in order to identify differences between the two groups. Variables included sex, early or advanced stage, tumor location, cell type, differentiation status, angiolymphatic and perineural invasion. The extent of tumor spread was assessed by AJCC classification based on histological examination of the resected specimen.

Follow up

Survival status was evaluated by review of the medical database and telephone follow-up of all patients who had no regular outpatient department visits for more than 3 months.

Statistical analysis

The percentages of patients surviving three years were calculated using the Kaplan-Meier technique. Comparisons of associations between sex and other variables was carried out using Fisher's exact test or Pearson's chi-square test. The p value was set at 0.05 for statistical significance. Analysis was performed using the SPSS software package, version 10.0 (SPSS Inc., Chicago, IL, USA).

Results

Between 2002 and 2007, 32 and 462 patients whose age was younger than 30 years (group 1) and 60-70 (group 2) years old, respectively, underwent surgical resection of primary colorectal tumor in our hospital and their medical records were retrospectively analyzed. The baseline characteristics and histopathological features of the patients included in the study are shown in Tables 1 and 2. In the younger age group there was a higher proportion of male patients ($p = 0.026$), and

Table 1. Characteristics of colorectal cancer grouped by age

	Colorectal cancer, <= 30 years old	Colorectal cancer, 60-70 years old	p value
N	32	462	
Gender F/M	11/21 (34%/66%)	203/259 (44%/56%)	*0.026[b]
Early or advanced stage			0.717[b]
Early stage (I-II)	13 (41%)	205 (44%)	
Advanced sage (III-IV)	19 (59%)	257 (56%)	
Terminal stage (IV)	7 (22%)	95 (21%)	0.823[b]
Tumor location			0.284[c]
Right side	5 (16%)	105 (23%)	
Left side	16 (50%)	165 (35%)	
Rectum	11 (34%)	192 (42%)	
Synchronous	0	8 (2%)	
Lower third rectal cancer	4 (13%)	70 (15%)	0.684[b]
Tumor perforation	2 (6%)	1 (0.2%)	**< 0.0001[a]

[a] Yate's correction of contigency. [b] Fisher's exact test. [c] Peason chi-square test. *: $p < 0.05$, **: $p < 0.01$.

Table 2. Histopathology features of colorectal cancer grouped by age

	Colorectal cancer, < 30 years old	Colorectal cancer, 60-70 years old	*p* value
n	32	462	
AJCC Stage			0.677[c]
I	9	97	
II	5	108	
III	11	162	
IV	7	95	
Mucinous Adenoca	0	26 (6%)	0.168[c]
Angio-lymphatic invasion	6 (19%)	88 (19%)	1[b]
Peri-neural invasion	1 (3%)	26 (6%)	0.547[c]
Pedicle lymph node metastasis	3 (9%)	24 (5%)	0.407[a]
Extra-nodal invasion	3 (9%)	12 (3%)	*0.031[a]
Poorly differentiation	6 (19%)	49 (11%)	0.152[a]

[a] Yate's correction of contigency. [b] Fisher's exact test. [c] Peason chi-square test. *: $p < 0.05$, **: $p < 0.01$.

higher percentages of patients who presented with tumor perforation ($p < 0.0001$) or with extra-nodal invasion ($p = 0.031$). No synchronous lesion was noted in group 1 but lesions were found in 8 patients in group 2.

Pathologic staging

Of the 32 patients who were younger than 30 years old, 13 were early stage, 19 were advanced stage, which included 7 in terminal stage. Of the 462 patients who were 60-70 years old, 205 were early stage, 257 were advanced stage, which included 95 in terminal stage. There was no statistically significant difference in pathologic staging between the two groups.

Tumor location, invasion extent, cell type, and differentiation status

In the younger age group, tumors occurred more commonly at the left side (50%) as compared with other locations but this was not statistically significant when compared with the older group. No mucinous adenocarcinoma was identified in younger age group, compared with such cases in the older group ($p = 0.168$). Percentages of patients with angiolymphatic or perineural invasion, pedicle lymph node involvement, or poorly differentiated type were non-significantly different between the two groups.

3-year survival

The 3-year survival rates were 71% and 66% ($p = 0.897$) for all stages combined, 92% and 89% ($p = 0.770$) for early stages, and 58% and 49% ($p = 0.540$) for advanced stages in the younger and older groups, respectively, as shown in Figs. 1 to 3.

Discussion

A recent study revealed that colorectal cancer incidence rates for both males and females increased in 27 of 51 countries worldwide between 1983 and 2002, and the most likely cause was postulated to be an increasingly "Western-style" diet consumed in those countries. The rise was seen primarily in developing countries including Eastern European countries, most parts of Asia, and some countries in South America. In Taiwan, colorectal cancer has become the first most common

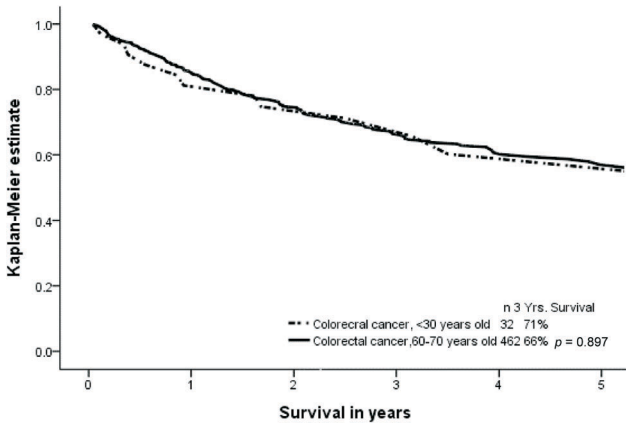

Fig. 1. 3-year survival of all stages.

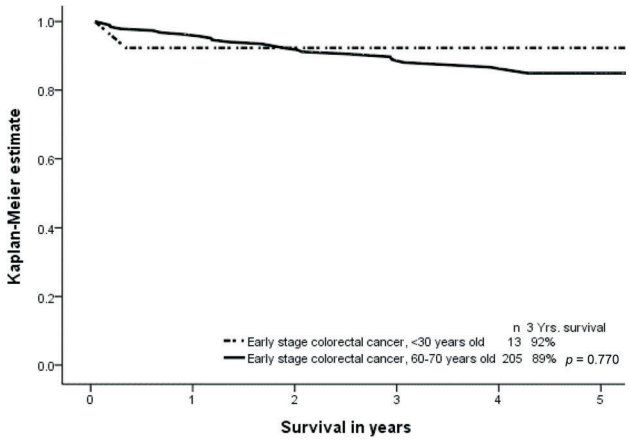

Fig. 2. 3-year survival of early stages (I-II).

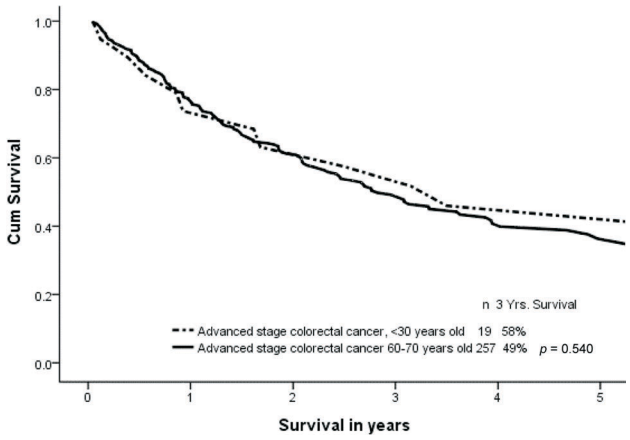

Fig. 3. 3-year survival of advanced stages (III-IV).

cause of cancer-related death in recent years. Its incidence in the general population in Taiwan is 45.78/100 000, and the average age at diagnosis is 67 years. In a study by the American Cancer Society, researchers looked at trends in colorectal cancer incidence rates between 1992 and 2005 among young adults (20 to 49 years) by sex, race/ethnicity, age, stage at diagnosis, and anatomic site. The study found the incidence rates of colorectal cancer increased 1.5 percent per year in men and 1.6 percent per year in women from 1992 to 2005. The largest annual percent increase in colorectal cancer incidence was in the youngest age group (20-29 years), in whom incidence rates rose by 5.2% per year in men and by 5.6% per year in women. They state the rises are due to an increase in left-sided tumors, particularly in the rectum. The researchers hypothesize several possibilities for the rise, including rising rates of obesity, which is a major risk factor for colorectal cancer. For most people under the age of 50, screening for colorectal cancer is generally not done. Screening is arranged only when the patient has a family history, chronic inflammatory bowel disease or a predisposing genetic condition. Since most patients below 50 years are not screened, benign polyps therefore have more time to develop into invasive cancer. Young-onset colorectal cancer is thought to be clinicopathologically different from older-onset colorectal cancer and tends to occur in patients with hereditary germline conditions such as Lynch syndrome and familial adenomatous polyposis.[14] Many investigators have reported colorectal carcinoma in patients under 40 years of age usually has a poor prognosis, and is often characterized by advanced stage at presentation, mucinous and poorly differentiated carcinoma, and delay in diagnosis.[2-4,6,9,10,12,13,16] However, controversies still exist with regard to the features and the prognosis of colorectal cancer in young patients.[5,19] Among the Taiwanese patients with colorectal carcinoma, the male-to-female ratio was 1.4:1. In the present study, the male-to female ratio was 1.9:1 in group 1 and 1.3:1 in group 2 (p = 0.026). There was no difference in the clinical staging between the two groups. Likewise, there were no statistically significant differences between group 1 and group 2 with respect to TNM stage, tumor location, angiolymphatic or perineural invasion, mucinous and poorly differentiated cell type, and pedicle lymph node involvement. The overall three-year survival rate was 71% in group 1 and 66% in group 2. Taking early or advanced stage into account, the three-year survival rate was also similiar in these two groups. The higher prevalence of tumor perforation and histological extra-nodal invasion in group 1 may have been due to delays in diagnoses. Our findings suggest that patients younger than 30 years with colorectal cancer have clinicopathologic characteristics and stage at presentation similar to those of older patients. The stage-by-stage analysis revealed that, survival rate in younger adult patients were no different from those of older patients, and this finding is consistent with those reported in many other studies.[5,7,8] If detected early, younger adult patients have even been shown to have better overall 3-year survival rates compared with older patients.[3,12,17]

Conclusion

The most important prognostic factor has been shown to be clinical staging, rather than age.[12,18] Since the most common symptoms in colorectal cancer like rectal bleeding, abdominal pain, weight loss, and change in bowel habits including constipation and diarrhea are all non-specific,[4,16] the clinicians should always be alert to the possibility of this cancer in younger adults. With early diagnosis, excellent survival rates can be achieved with current treatment options.[15]

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病例分析

大腸直腸癌在年輕族群並不代表有較差之預後

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背景 隨著大腸直腸癌的盛行，小於 30 歲年輕人罹患此疾的比例也逐漸升高。本研究從臨床分期，病理表現，及三年存活率上的比較，來探討兩個族群的差異性。

方法 將本院 2002 年 1 月至 2007 年 12 月，32 位年齡小於 30 歲及 462 位年齡介於 60 至 70 歲罹患大腸直腸癌，接受手術切除並有完整病理報告的患者來做比較。

結果 1. 年輕族群有較高男性比例，而在腫瘤破裂及淋巴結外侵犯也比老年人多。
2. 在腫瘤分期上並無證據顯示某一族群有較早期或末期的傾向。
3. 年輕族群腫瘤位置以左側較多，而在血液淋巴及神經侵犯，細胞分化程度來看並無明顯區別。
4. 相同期別的兩族群在三年存活率上並無顯著差異。

結論 本研究發現年輕人罹患大腸直腸癌在臨床分期，細胞分化，腫瘤侵犯程度，及三年存活率上，與老年族群並無明顯差別。

關鍵詞 臨床病理特徵、年輕大腸直腸癌患者。