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Small Colonic Cancer with Invasion of the Subserosal Layer. Report of a Case

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Small, flat-type advanced colonic adenocarcinomas are rare. We present a case of small colonic carcinoma invading the subserosal layer. A 61-year-old asymptomatic man was admitted for further examination of positive occult blood test. Barium enema and endoscopic examination revealed a small (10 mm in diameter) flat lesion with elevated margins and a central depression, in the transverse colon. Biopsy specimen taken from the tumor showed poorly differentiated adenocarcinoma. Based on radiologic and endoscopic evaluation, a provisional diagnosis was made of colonic tumor with invasion of the deep submucosal layer. Surgical resection of the transverse colon was performed. The tumor was macroscopically a type IIa + IIc lesion measuring 10 mm in diameter. Histological examination showed poorly differentiated adenocarcinoma infiltrating the subserosal layer. Awareness of this type of tumor should allow early diagnosis and treatment, resulting in improved prognosis.

Key Words: small cancer, transverse colon, subserosal layer

Introduction

Most colorectal cancers are believed to arise from benign adenomatous polyps[1,2]. The recent introduction of new diagnostic procedures including endoscopy with TV monitoring has improved the detection of small, flat-type neoplasms[3,4]. Several studies using these techniques have indicated the presence of *de novo* colorectal cancers that originate from the mucosal lining(5-7). However, advanced colonic cancers measuring < 10 mm in diameter are rare(8-16). We report a rare case of small advanced cancer in the transverse colon.

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Case Report

A 61-year-old asymptomatic man was admitted to our hospital in October 1993 for further examination of positive occult blood test. On physical examination, the abdomen was flat with no tenderness or hyperactive bowel sound. Laboratory data demonstrated slight elevation of CEA (5.5 ng／ml). Barium enema showed a flat elevated lesion with irregularly-shaped central depression in the transverse colon (Fig. 1). Colonoscopy

Figure 1. Barium enema showing a flat tumor with central depression in the transverse colon.

Figure 2. Endoscopic view showing a small elevated tumor with central depression (IIa + IIc-like lesion).

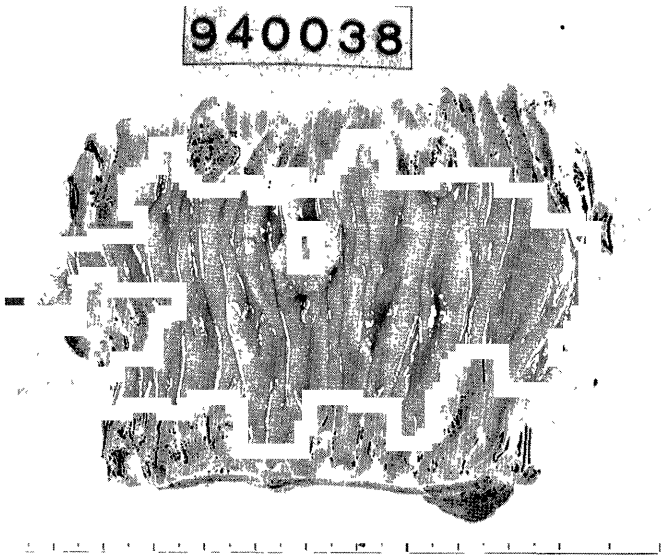

Figure 3. Resected specimens showing ulcerated mass, 10 mm diameter in the transverse colon.

identified a depressed lesion with elevated margins (IIa + IIc) (Fig. 2). The elevated margins did not disappear after pneumatic overextension. Histopathological examination of a biopsy material taken from the lesion showed adenocarcinomatous growth. Preoperative diagnosis was early colon cancer of type IIa + IIc with massive invasion. Four pedunculated polyps (9-15 mm in size) and one semisessile polyp (10 mm in size) were also detected in the transverse colon and descending colon, respectively. The former group of

Figure 4. (**A**) The carcinoma is mainly located in the submucosa, with infiltration of the proper muscular and subserosal layers. Magnification, ×100.

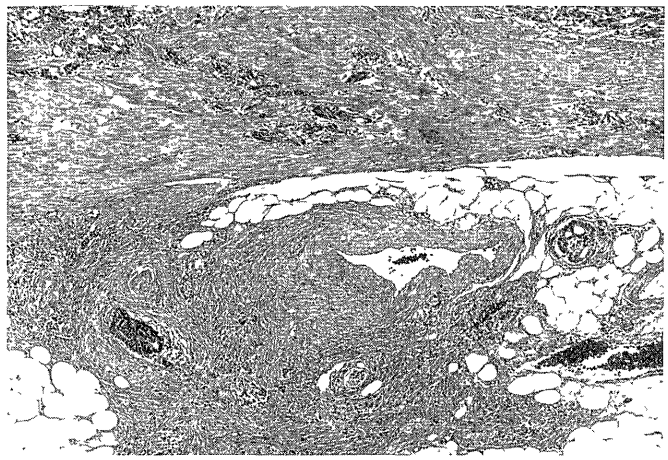

Figure 4. (**B**) Carcinoma cells infiltrating the subserosal layer. ×100.

polyps was treated by endoscopic polypectomy, and histological examination showed adenocarcinomas in all polyps. The patient underwent partial left-side colectomy. Resected specimens showed IIa + IIc-like lesions, measuring 10 × 10 mm in size (Fig. 3). Histopathological examination of the depressed lesion revealed a poorly differentiated adenocarcinoma involving the submucosa and muscularis propria (Fig. 4A). In one section, the tumor extended into the subserosal fat and lymphatic system (Fig. 4B). No residual adenomatous tissue was identified. One lymph node (N2) was found to contain metastatic deposits.

The postoperative course was satisfactory, and the patient has been in good health and CEA has been normal five years after the operation without any evidence of tumor recurrence.

Discussion

Endoscopic examination and improvement in endoscopy technologies have allowed the recognition of more cases of flat or depressed type early colonic cancers. In particular, the introduction of endoscopes with TV monitors into the field of colonoscopy has accelerated this trend[3,4]. It is believed that polyps < 10 mm in diameter have a very low risk for malignancy; various studies have shown a strong correlation between tumor size and depth of invasion[17,18].

Flat depressed early colon cancers are characterized by non-polypoid growth pattern, no associated adenomatous tissues, and a tendency for submucosal invasion[4,19,20]. Therefore, such colorectal carcinomas are thought to grow rapidly and show aggressive behavior compared to malignant polyps[6,8,17]. Minamoto et al.[21] proposed that in patients with early invasive colorectal carcinoma, the presence of nonpolypoid growth pattern and lack of adenomatous component may be risk factors predictive of nodal metastasis. Furthermore, other case studies reported small colorectal cancers (< 10 mm in size), similar to our case, with lymph node metastases, suggesting that tumor size may not always serve as a reliable parameter for estimating risk of lymph node metastasis[4,21,22].

Flat and depressed colonic tumors are considered to originate from the hyperplastic mucosa (*de novo* tumors)[16,23]. Muto et al.[17] argued that most small flat carcinomas arise from dysplastic adenomas although some show de novo origin. In our case, we were unable to find any evidence of residual adenomatous elements even after careful histologic examination, thus supporting the hypothesis that this cancer had originated from the colonic mucosa (*de novo*)[19]. The existence of *de novo* cancers must be considered in the design, implementation, and interpretation of all strategies for mass screening and early detection in colorectal cancer programs to avoid a bias pitfall[24]. It should be remembered, however, that whether colorectal carcinoma arises from an adenoma or is a *de novo* tumor, the most important step in the management of such cases is the detection of these carcinomas as early as possible.

An important feature used for evaluating the depth of invasion of flat colonic tumors is that pneumatic extension during endoscopy does not result in the disappearance of the elevated margins[18,25]. Igari *et al.*[20] reported that the depressed lesion indicated the presence of submucosal invasion, and that deep depression was seen when invasion reached the proper muscle layer. Furthermore, Shimoda *et al.*[26] reviewed small colorectal carcinomas and reported that the extent of depression present on the surface of the elevated lesions on the frontal view and the degree of deformity in profile views correlated with the depth of invasion. However, in these analyses, proper profile views of the lesions were not obtained in quite a few cases, and the surface characteristics of small elevated lesions were not well documented[26]. In our case, we misdiagnosed the depth of the massive submucosal invasion on endoscopy. In this regard, evaluation using endoscopic ultrasonography[27] seems to be the most useful technique for the accurate diagnosis of colonic cancer.

Small and flat carcinomas are sometimes missed on routine examination[23,28]. It is important that endoscopists are aware of presence of such lesions, and early detection of this type of colorectal tumors should lead to reduced morbidity and mortality in the future.

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References

1) Spratt JS, Ackerman LV, Moyer CA. Relationship of polyps of the colon to colonic cancer. Ann Surg 148:682-98, 1958
2) Muto T, Bussey HJR, Morson BC. The evolution of cancer of the colon and rectum. Cancer 36:2251-70, 1975
3) Wolber RA, Owen DA. Flat adenoma of the colon. Human Pathol 22:70-4, 1991
4) Tada S, Yao T, Iida M et al. A clinicopathologic study of small flat colorectal carcinoma. Cancer 74:2430-5, 1994
5) Nagasako K. Endoscopic diagnosis of early colon cancer. Jpn J Cancer Clin 34:1326-32, 1988
6) Shimoda T, Ikegami M, Fujisaki J et al. Early colorectal carcinoma with special reference to its development *de novo*. Cancer 64:1138-46, 1989
7) Mori M Barnard GF, Staniunas RJ. Prothymosin-alpha mRNA expression correlates with that of c-mic in human colon cancer. Oncogene 8:2821-6, 1993
8) Herrera L, Hanna S, Castillo et al *de novo* adenocarcinoma of the colon measuring 8 mm in diameter with lymph node metastases. Dis Colon Rectum 34:275-9, 1991
9) Adachi M, Muto T, Morioka Y, et al Flat adenoma and flat mucosal carcinoma (IIb type)-a new precursor of colorectal carcinoma ? Dis Colon Rectum 31:236-43, 1988
10) Yamamura T, Akaishi O, Hanai H et al. Small advanced colon cancer measuring 1 cm in diameter, report of a case. J Jpn Soc Coloproctol 45:1029-32, 1992
11) Sakatoku M, Arakawa T, Kosugi H et al. A case report of small advanced carcinoma (10 mm in diameter) of the colon. J Jpn Soc Coloproctol 46:198-201 1993
12) Hirai T, Kato T, Sakamoto F et al. Small advanced carcinoma of the colon, report of a case. Stomach Intestine 28:1233-6, 1993
13) Suzuki A, Sugiyama S, Satoh S et al. Small advanced colon cancer, 10 mm in diameter, removed by endoscopic resection, report of a case. Stomach Intestine 28:1243-5, 1993
14) Tsuchihashi N, Takano M, Fujiyoshi T et al. Small advanced colon cancer, 9 mm in diameter, report of a case. J Jpn Soc Coloproctol 48:150-5, 1995
15) Misono T, Nishimata H, Nishimata Y et al. Small advanced cancer

of the descending colon, retrospective analysis of X-ray findings, report of a follow-up case. Stomach Intestine 30:213-8, 1995
16) Kasumi A, Kratzer GL, Takeda M. Observations of aggressive, small, flat, and depressed colon cancer. Report of three cases. Surg Endosc 9:690-4, 1995
17) Muto T, Kamiya J, Sawada T et al. Small flat adenoma of the large bowel with special reference to its clinicopathologic features. Dis Colon Rectum 28:847-51, 1985
18) Fuchigami T, Hirakawa M, Iwashita A. et al. Diagnosis of the depth of invasion of colonic cancer, from radiologic and endoscopic viewpoints. Stomach Intestine 28:1157-67, 1993
19 Hunt DR, Cherian M. Endoscopic diagnosis of small carcinoma of the colon; report of three cases. Dis Colon Rectum 33:143-7, 1990
20 Igari T, Tei S, Iwasaki Y et al. Growth patterns and macroscopic features of colorectal cancer. Stomach Intestine 28:1199-207, 1993
21 Minamoto T, Mai M, Ogino T et al. Early colorectal carcinomas metastatic to the lymph node with attention to their nonpolypoid development. Am J Gastroenterol 88:1035-9, 1993
22) Inaba S, Tanaka T, Yamagishi H et al. A case of colon cancer metastasizing to the spleen. Jpn J Clin Oncol 14:425-30, 1984
23) Matsumoto T, Iida M, Yao T, et al Role of nonpolypoid neoplastic lesions in the pathogenesis of colorectal cancer. Dis colon Rectum 37:450-5, 1994
24) Shamsuddin AM, Kato Y, Kunishima N, et al F. Carcinoma in situ in nonpolypoid mucosa of the large intestine; report of a case with significance in strategies for early detection. Cancer 56:2849-54, 1985
25) Niihara T, Nishimata H, Misono T et al. Retrospective analysis of a small advanced cancer of the sigmoid colon. report of case. Stomach Intestine 28:1217-23, 1993
26) Shimoda Y, Kajiwara T, Kitagawa S et al. Diagnosis of colon cancer (depth of invasion) by barium enema examination; present condition. Jpn J Clin Radiol 34:533-44,1989
27 Shimizu S, Tada M, Ohtsuka H. et al. Evaluation of the depth of colorectal cancers using endoscopic ultrasonography in comparison with barium enema and colonoscopic examination. Stomach Intestine 28;1183-9, 1993
28) Bensen S, Mott LA, Dain B, et al J. The colonoscopic miss rate and true one-year recurrence of colorectal neoplastic polyps. Am J Gastroenterol 94:194-9, 1999