Pedunculated Polyp of Early Sigmoid Colon Cancer with Invasive Micropapillary Carcinoma

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A 64-year-old man was admitted to Dongo Hospital (Nara, Japan) with colonic cancer, following the onset of abdominal pain, diarrhea and fever. A pedunculated polyp was detected in the sigmoid colon by colonoscopy, and laparoscopy-assisted sigmoidectomy with regional lymph node resection was performed. Histopathologically, the tumor exhibited massive invasion of the submucosa, and multiple lymph node metastases were detected. The tumor mainly consisted of a micropapillary component. Immunohistochemically, MUC1 was expressed at the stromal edge of the micropapillary component and showed the characteristic ‘inside-out’ pattern of a micropapillary carcinoma. The multiple lymph node metastases were predominantly composed of carcinoma with a micropapillary pattern. Our case suggests that when a micropapillary component is identified in a pre-operative biopsy specimen, even for a pedunculated early colorectal cancer, the extent of surgical resection should be carefully considered due to the high potential for nodal metastasis.

Key words: micropapillary carcinoma – early colonic cancer – lymph node metastasis

INTRODUCTION

Invasive micropapillary carcinoma (MC) is defined as a carcinoma composed of small clusters of tumor cells lying within clear stromal spaces simulating vascular channels (1) and is known to be associated with a high incidence of nodal metastasis (2). MC has been reported in various organs, including the breast (2–8), lung, ovary, urinary bladder, salivary gland (9–12) and colorectum (13–15), but its incidence in early colorectal cancer has not been described.

We experienced a patient with pedunculated early sigmoid colon cancer, which had a micropapillary component and multiple nodal metastases. In the present report, we describe the clinicopathological and histochemical features of this early sigmoid colon cancer with a micropapillary component and review some reports in the English medical literature.

CASE REPORT

A 64-year-old man was admitted to Dongo Hospital (Nara, Japan) with colonic cancer, following the onset of abdominal pain, diarrhea and fever. A pedunculated polyp of ~3 cm in diameter was detected in the sigmoid colon by colonoscopy (Fig. 1). The histological diagnosis of a biopsy specimen was moderately differentiated tubular adenocarcinoma. A barium enema revealed wall deformities in the sigmoid colon (Fig. 2a). Abdominal computed tomography revealed regional lymph node swelling (Fig. 2b). The pre-operative diagnosis was early sigmoid colon cancer with stalk invasion, and laparoscopy-assisted sigmoidectomy and regional lymph node resection were performed.

Macroscopically, the tumor was a pedunculated polyp of 30 × 25 × 20 mm with a flat tumor head that resembled a crown (Fig. 3). Microscopically, massive submucosal invasion of ~1500 μm from the muscular layer of the mucosa (Fig. 4), extensive lymphatic invasion (Fig. 5a) and mild venous vessel invasion were observed (Fig. 5b). The tumor was mainly composed of atypical cells arranged in micropapillary structures and tumor cell clusters were observed to

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Immunohistochemically, MUC1 (Ma695 NCL-MUC-1 Novocastra) expression was observed in a luminal staining pattern in typical adenocarcinoma foci, but at the stromal edges of tumor clusters in the micropapillary structures (Fig. 7). The latter staining represented the characteristic ‘inside-out’ pattern of MC and we diagnosed the tumor as an MC. The micropapillary structures comprised ~80% of the tumor, and the remaining 20% was moderately differentiated tubular adenocarcinoma. Regional lymph node (paracolic lymph node) metastases predominantly composed of carcinoma with a micropapillary pattern were detected (Fig. 8). The final pathological stage was A (TNM classification). At the present time, the patient has received adjuvant chemotherapy for 25 months after the operation without recurrence.
DISCUSSION

Since Siriaunkgul and Tavassoli (3) reported that an MC was a rare variant of invasive breast carcinoma and that the micropapillary pattern was maintained in metastatic foci, MC has been reported to be an aggressive variant of breast carcinoma with a high incidence of lymph node metastases and poor clinical outcome (2,4,10,13–15).

MC has distinctive histological features characterized by tufts of tumor cells arranged in pseudopapillary structures devoid of fibrovascular cores and surrounded by empty and clear spaces bounded by fibrocollagenous tissue (13). This pseudopapillary structure resembles lymphatic invasion but has been attributed to inversion of cell polarization, meaning that an epithelial membrane is present on the outer surface of the cell clusters. This was confirmed in the present study by immunostaining for MUC1, a glycoprotein normally located on the apical cell surface of normal glandular epithelia, which showed a characteristic ‘inside-out’ pattern (16,17). It has been supposed that the reverse polarization of the epithelial cells in an MC is related to their ability to invade vessels (16,17).

To the best of our knowledge, there are only three previous reports of a micropapillary colorectal carcinoma, especially early colorectal carcinoma, and no previous reports of colorectal MC.

Kim et al. (14) reported that the positive rate for nodal metastasis was higher in MC (74.5%, 41/55 cases) than in conventional adenocarcinoma (33.6%, 40/119 cases, \( P < 0.001 \)). Haupt et al. (15) showed that the presence of MC is an independent predictor of nodal metastasis. In our case, the presence of MC in the colorectum was closely related with nodal metastasis, similar to the case for MCs in other organs.
In the present case, the pedunculated polyp of early sigmoid colon cancer with a micropapillary component was associated with extensive lymphovascular invasion and multiple lymph node metastases, although pedunculated polyps are generally considered to exhibit few lymph node metastases (18–20).

The proportion of the MC component required for a diagnosis of MC has not yet been established. Pure MCs are extremely rare. A micropapillary component is usually associated with conventional carcinoma. Kim et al. (14) reported that the proportion of the MC component ranged from 5% to 80% of the total tumor volumes, and that in most cases (87.3%), the proportion of the MC component was <30% of the tumor volume. Haupt et al. (15) reported that the proportion of the micropapillary component ranged from 5% to 60% of the entire tumor and that the micropapillary component was <10% in the majority (70%) of colorectal carcinomas with an MC component. In our case, the micropapillary component accounted for ~80% of the entire tumor and was even detected in the biopsy specimen. Although the histological diagnosis of the biopsy specimen was moderately differentiated tubular adenocarcinoma at first, reviewing it after operation, there were almost MC component in it (Fig. 9).

In conclusion, we experienced a patient with a pedunculated early sigmoid colon cancer, which had a micropapillary component and multiple nodal metastases. The presence of an MC in the colorectum seemed to be closely related with nodal metastasis, similar to the case for MCs in other organs. Therefore, if a micropapillary component is identified in a tumor, particularly in a biopsy specimen, even if the pre-operative diagnosis is a pedunculated early colorectal cancer, we should carefully consider the extent of surgical resection due to the high potential for nodal metastasis.

**Conflict of interest statement**

None declared.

**References**
