Colon cancer under Type IV pit pattern adenoma with multiple metastases in lymph nodes and bones: A case report

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Abstract

With the development of magnifying colonoscopy and an understanding of pit patterns of tumors, the diagnostic accuracy of tumors in the colon has improved. However, we encountered an aggressive, 2.5-cm diameter tumor in the colon, most of which grew under the component of tubular adenoma with high-grade atypia. This case represents an atypical example of colon cancer and we consider it worth reporting.

Keywords: colon cancer, bone metastasis, pedunculated

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Introduction

In Japan in 2017, colorectal cancer affected nearly 150,000 people and was responsible for more than 50,000 deaths¹. The diagnosis of colorectal cancer is usually straightforward as a result of the development of magnifying colonoscopy and biopsy. Pretreatment staging is facilitated by contrast-enhanced computed tomography (CT) and statistical knowledge of frequent sites of synchronous distant metastases². However, a small proportion of patients presents with unspecific clinical symptoms and unexpectedly small or morphologically atypical tumors. Herein, we report on a patient with aggressive colon cancer, most of the surface of which was covered by tubular adenoma.

Case presentation

A 61-year-old man presented at a medical clinic due to back pain lasting more than 1 week. Blood examination revealed serum carcinoembryonic antigen (CEA) of 7.5 ng/mL (normal range: <5.0 ng/mL) and serum CA9-9 of 896 units/mL (normal range: <37.0 units/mL). Abdominal CT revealed enlarged para-aortic lymph nodes, and the patient was referred to Kochi Medical School Hospital for the examination and treatment of the disclosed lesions.

On enhanced abdominal CT, the lymph node swelling was seen to extend from the level of the bifurcation of the iliac artery to the level of the renal artery (Figure 1A). Enlargement of the bilateral hilar lymph nodes was also noted. There was no sign of metastases in the liver and lungs. However, there was no indication of the primary tumor site, except for a slightly thickened sigmoid colon and surrounding multiple small lymph nodes. Strong accumulation of fluorodeoxyglucose (FDG) on FDG-positron emission tomography (PET)-CT was detected in the sigmoid colon, para-aortic lymph nodes, bilateral hilar lymph nodes, and multiple bones (Figure 1B). Based on the results of the radiological examination, endoscopic examination of the colon and rectum was recommended, which revealed a Type 1 tumor with a diameter of approximately 3 cm. Observation of the tumor surface revealed that most of the tumor had a Type IV pit pattern with a few dimples (Figure 1C, D).

Because the endoscopic observations were not consistent with the results of FDG-PET-CT, sigmoidectomy and biopsy of the para-aortic lymph nodes and mesentery were performed for pathological diagnosis and determination of subsequent treatment. On the resected specimen, the surface of the tumor was soft, although the
Mesentery of the sigmoid was thickened and hard (Figure 2A, B).

Pathologically, the tumor was 2.5 cm in diameter. The surface of the tumor was composed of tubular adenoma with high-grade atypia (Figure 2C-E). However, the tumor under the lamina propria showed infiltration of highly invasive, poorly differentiated tumor cells (Figure 2D). The lymph nodes within the mesentery and para-aortic tumor were diagnosed as metastasis-positive nodes. The tumor was negative for chromogranin A, synaptophysin, CD56, and α-fetoprotein, suggesting that a neuroendocrine tumor was unlikely. The tumor was pathologically diagnosed as poorly differentiated adenocarcinoma with lymph node metastases. Further examination revealed that the tumor was a RAS wild-type tumor, and the patient underwent chemotherapy as the first-line treatment regimen for metastatic colorectal cancer. However, the patient’s general status deteriorated gradually and he soon started to receive palliative care.

**Discussion**

Pit pattern analysis was initially developed by Kudo et al. using a magnifying endoscope. The pit patterns and their corresponding pathological types have now been described in detail and are widely used in daily clinical practice. Branched-like or gyrus-like pits (Type IV) represent intramucosal neoplastic lesions, especially tubulovillous adenoma and mucosal carcinoma. In the present study, endoscopic observations revealed that most of the tumor was covered by a lesion with a Type IV pit pattern, as shown in Figure 2; therefore, we initially considered that the lesion may not be responsible for enlargement of the para-aortic lymph nodes and FDG accumulation in the bones. However, the lack of other potential primary tumors and the need to start systemic treatment necessitated that the sigmoid colon be removed surgically for pathological evaluation.

Figure 1 Results of preoperative radiological and endoscopic examinations.
(A) Enhanced abdominal computed tomography revealed swelling of the para-aortic lymph nodes. The lymph nodes are indicated by the white arrowhead. (B) Strong accumulation of fluorodeoxyglucose (FDG) was detected in the sigmoid colon (arrowhead) and para-aortic lymph nodes. FDG accumulation was observed in the vertebra, sternum, costae, and pelvic bones. (C, D) Endoscopic examination revealed an approximately 3.0-cm tumor with a Type IV pit pattern.
Figure 2  Results of macroscopic and microscopic examinations of the resected specimen. 
(A, B) The resected specimen shows a 2.5-cm Type 1 tumor. The tumor was not firmly fixed to the muscle layer of the colon, and the submucosa near the tumor is well extended. (C) The entire resected tumor is shown. (D, E) Most of the surface was composed of tubular adenoma with high-grade atypia. (F) The center of the tumor was filled with tumor cells with severe nuclear atypia. Infiltration of these cells can be observed within the narrow stalk of the tumor, subserosa, and lymph nodes (not shown). The bar in Figure 2D is 1000 μm and the bars in 2E and 2F are 100 μm.
Matusmoto et al. reported their experience of small invasive colon cancer with extensive systemic metastasis\(^5\). In their case, the patient had non-polyploid small tumors, suggesting that it could be a de novo cancer. In contrast, the present patient had a relatively large tumor accompanied by tubular adenoma with high-grade atypia, suggesting that the adenoma-carcinoma sequence was the mechanism of tumor development. The main difference from classical tumors is that the majority of the tumor in the present study was covered by adenoma rather than the tumor surface being replaced by cancer cells.

The present case clearly suggests that careful evaluation of colon polyps is mandatory, even if the tumor seems to be an adenoma on magnifying colonoscopy. Furthermore, the resection of such tumors in selected cases may facilitate final diagnosis and enable subsequent treatment without a long gap between the initial hospital presentation and treatment. However, this has to be balanced with consideration of the patient’s general status and the invasiveness of surgical intervention.

In conclusion, we experienced a poorly differentiated adenocarcinoma covered largely by adenoma. Although magnifying endoscopy and pit patterns are useful tools for tumor diagnosis, careful comprehensive evaluation is necessary in peculiar cases.

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References