Early Pedunculated Colorectal Cancer with Nodal Metastasis: A Case Report

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Research Article

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Abstract

Background: Among early colorectal cancers, pedunculated polyps have a higher complete resection rate than non-pedunculated cases and rarely require additional surgery. However, this time, we experienced a case of pedunculated colorectal cancer, which was histologically poorly differentiated adenocarcinoma. Lymphatic invasion was also found, so additional intestinal resection was performed and nodal metastasis was found.

Case presentation: A 43-year-old woman underwent colonoscopy because of positive fecal occult blood. A 20 mm-sized pedunculated polyp was found in the descending colon, and endoscopic resection was performed. Histopathological examination revealed non-solid poorly differentiated adenocarcinoma, invading to the submucosa (3,500 µm from the muscularis mucosae) with lymphatic invasion. In spite of its early stage cancer, the risk of nodal metastasis was considered to be high, and bowel resection was additionally performed. Although there was no residual cancer in the site after endoscopic resection, a metastasis was found in one regional lymph node. The patient is undergoing postoperative adjuvant chemotherapy. There was no evidence of recurrence after three months after the additional surgery.

Conclusions: For pedunculated polyps, additional bowel resection was performed for patients with multiple risk factors for nodal metastasis such as poorly differentiated adenocarcinoma and positive lymphatic invasion. Then, we experienced a case of nodal metastasis, so we report it with a review of the literature.

Background

Endoscopic treatment is useful for early colorectal cancer. In particular, pedunculated polyps have a higher complete resection rate than non-pedunculated polyps, and pedunculated polyps rarely require additional bowel resection. In addition, poorly differentiated adenocarcinoma is rarely detected at an early stage. We report a case of pedunculated early colorectal poorly differentiated adenocarcinoma with nodal metastasis.

Case Presentation

A 43-year-old woman underwent colonoscopy because of positive fecal occult blood. A 20 mm-sized pedunculated polyp was found in the descending colon, and endoscopic resection was performed at local hospital. Histopathological examination revealed non-solid poorly differentiated adenocarcinoma, invading to the submucosa (3,500 µm from the muscularis mucosae) with lymphatic invasion. There was an indication for additional bowel resection, and she was referred to our hospital for surgical treatment. Physical findings: Height 163 cm, weight 86.1 kg, body mass index (BMI) 32 kg / m², slightly obese, and abdominal findings were not particularly noteworthy. All the laboratory tests were not remarkable. Tumor markers including carcinoembryonic antigen (CEA) and carbohydrate antigen 19-9 (CA19-9) were within normal limit. Endoscopic findings: A 20 mm-sized pedunculated polyp was found in the descending
colon, with a depression at the apex (Fig. 1). Computed tomography (CT): Neither lymph nodal nor distant metastasis was observed. Based on the preoperative diagnosis of descending colon cancer (cT1bN0M0, clinical stage I), laparoscopic descending colectomy and regional lymph node dissection were performed. The course was good and she was discharged six days after the operation. Histopathological examination: The tumor itself was a non-solid, poorly differentiated adenocarcinoma with adenoma around it. According to the Haggitt classification, level 2 (Fig. 2), positive lymphatic invasion (Fig. 3), and budding 3. No residual cancer was found in the site after endoscopic resection, and the patient was diagnosed as early-stage cancer, but metastasis was found in one regional lymph node. Pathologically, the cancer was classified as T1bN1aM0 StageIIIA according to the TNM classification, and postoperative adjuvant chemotherapy with oral S-1 was performed.

**Discussion And Conclusions**

Early colorectal cancer is defined as cases that remains in the mucosa or submucosa regardless of nodal metastasis[1]. Endoscopic treatment is beneficial for early colorectal cancer without nodal metastasis, and detailed histopathological examination can confirm whether the resection is complete or not. Among early colorectal cancers, those that invade the submucosa are classified as T1, and the nodal metastasis rate is reported to be 9–14.3% [2] [3] [4] [5] [6]. Pedunculated polyps correspond to Ip in the Paris classification [7]. According to a report by Kida et al., 68% of Ip polyps were adenoma, 25.4% were carcinoma in adenoma, 3.3% were m carcinoma, and the same 3.3% were submucosa-invading (sm) carcinoma[8]. Ip polyps are considered to be curatively resected if they are completely resected, with no cancer cells at the surgical margin, not poorly differentiated, and without lymphovascular invasion [9]. Therefore, Ip polyp rarely requires additional surgical treatment[10]. Kitajima et al. also reported that in Ip sm carcinoma, lymphatic metastasis was 0% in cases of head invasion or cases with a depth of less than SM 3000 µm and no lymphatic invasion[11]. Haggitt et al. classified the infiltration levels of pedunculated malignant polyps into four levels: Level 1: Infiltrative adenocarcinoma localized to the polyp head (infiltration through the lamina muscularis mucosae), Level 2: Neck involvement, Level 3: Cancer cells in the stem, Level 4: Cancer cells infiltrating the submucosal tissue at the level of the adjacent intestinal wall[12]. The Haggitt line is a fictitious border drawn as a baseline to distinguish between head invasion and stalk invasion. If the infiltration level is less than 4, the risk of local recurrence or metastasis is estimated to be low. Tateishi et al. report that the risk of nodal metastasis is increased if any one of lymphatic invasion, poorly or moderately differentiated adenocarcinoma, and the presence or absence of budding is applied[4]. In this case, Haggitt classified it as level 2, but it was poorly differentiated adenocarcinoma, with a depth of SM3500 µm, positive lymphatic invasion, and budding3, and the risk of nodal metastasis was considered to be high. Poorly differentiated colorectal adenocarcinoma is reported to be about 4 to 7% of all colorectal cancers in Japan[13] [14], but it is often found in advanced cancers. Early cancer, especially cases found in the Paris classification Ip type such as this case, are extremely rare. It is quite rare that additional bowel resection is required for the Paris classification Ip type, and the nodal metastasis rate is about 10% in cases of SM 1000 µm or more, and the remaining 90% has no nodal metastasis. On the other hand, if there are multiple factors[15] that are
indicated for additional bowel resection of T1 cancer as in this case, the risk of nodal metastasis may be high. Among poorly differentiated adenocarcinomas, the non-solid type has significantly more nodal metastasis, liver metastasis, and peritoneal dissemination than the solid type, and has a poor prognosis. Considering that laparoscopic surgery has become common recently and less invasive surgery is possible[16], if there are multiple factors such as SM infiltration distance, lymphatic invasion, budding, etc., it is important to perform additional bowel resection without hesitation rather than deciding the treatment policy based on the Haggitt classification in the Ip type of the Paris classification.

We report a case of pedunculated early colorectal poorly differentiated adenocarcinoma with nodal metastasis, including a review of the literature. This case is expected to be successfully controlled and provides a favorable outcome.

**Abbreviations**

BMI  
body mass index  
CEA  
carcinoembryonic antigen  
CA19-9  
carbohydrate antigen 19 – 9  
CT  
computed tomography

**Declarations**

Ethics approval and consent to participate

This is a case report. The Institutional Review Board at the Tokyo Women's Medical University has confirmed that no ethical approval is required. Consent was obtained from the patient for participation in this study.

Consent for publication

We obtained the patient's consent for publication of this case report.

Availability of data and materials

All data generated or analyzed during this study are included in this published article.

Competing interests

The authors declare that they have no competing interests.
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Authors’ contributions

HK drafted the manuscript, and SY performed the preoperative investigation. SY and YN provided academic advice. HK, HA and SY performed the operation. YN and TY made a pathological evaluation. All authors have read and approved the final manuscript.

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References

1. Shimoda T, Ikekami M, Fujisaki J, Matsui T, Aizawa S, Ishikawa E. Early colorectal carcinoma with special reference to its development de novo. Cancer. 1989;64:1138–46.
2. Egashira Y, Yoshida T, Hirata I, Hamamoto N, Akutagawa H, Takeshita A, Noda N, Kurisu Y, Shibayama Y. Analysis of pathological risk factors for lymph node metastasis of submucosal invasive colon cancer. Mod Pathol. 2004;17:503–11.
3. Nascimbeni R, Burgart LJ, Nivatvongs S, Larson DR. Risk of lymph node metastasis in T1 carcinoma of the colon and rectum. Dis Colon Rectum. 2002;45:200–6.
4. Tateishi Y, Nakanishi Y, Taniguchi H, Shimoda T, Umemura S. Pathological prognostic factors predicting lymph node metastasis in submucosal invasive (T1) colorectal carcinoma. Mod Pathol. 2010;23:1068–72.
5. Okabe S, Shia J, Nash G, Wong WD, Guillem JG, Weiser MR, Temple L, Sugihara K, Paty PB. Lymph node metastasis in T1 adenocarcinoma of the colon and rectum. J Gastrointest Surg. 2004;8:1032–9. discussion 1039–1040.
6. Tominaga K, Nakanishi Y, Nimura S, Yoshimura K, Sakai Y, Shimoda T. Predictive histopathologic factors for lymph node metastasis in patients with nonpedunculated submucosal invasive colorectal carcinoma. Dis Colon Rectum. 2005;48:92–100.
7. The Paris endoscopic classification of superficial neoplastic lesions: esophagus, stomach, and colon: November 30 to December 1, 2002. Gastrointest Endosc 2003, 58:S3-43.
8. Kida M, Tanaka K, Hattori F, Kondou S, Harada W, Takagi A, Itou K, Matsumoto H, Kojima K, Taniyama K, et al. [Clinico-pathological studies on Is, Ip polyps and flat elevations in the large intestine]. Nihon Shokakibyo Gakkai Zasshi. 1990;87:1154–9.
9. Bujanda L, Cosme A, Gil I, Arenas-Mirave JL. Malignant colorectal polyps. World J Gastroenterol. 2010;16:3103–11.
10. Aarons CB, Shanmugan S, Bleier JI. Management of malignant colon polyps: current status and controversies. World J Gastroenterol. 2014;20:16178–83.

11. Kitajima K, Fujimori T, Fujii S, Takeda J, Ohkura Y, Kawamata H, Kumamoto T, Ishiguro S, Kato Y, Shimoda T, et al. Correlations between lymph node metastasis and depth of submucosal invasion in submucosal invasive colorectal carcinoma: a Japanese collaborative study. J Gastroenterol. 2004;39:534–43.

12. Haggitt RC, Glotzbach RE, Soffer EE, Wruble LD. Prognostic factors in colorectal carcinomas arising in adenomas: implications for lesions removed by endoscopic polypectomy. Gastroenterology. 1985;90:328–36.

13. Ogawa M, Watanabe M, Eto K, Kosuge M, Yamagata T, Kobayashi T, Yamazaki K, Anazawa S, Yanaga K. Poorly differentiated adenocarcinoma of the colon and rectum: clinical characteristics. Hepatogastroenterology. 2008;55:907–11.

14. Takeuchi K, Kuwano H, Tsuzuki Y, Ando T, Sekihara M, Hara T, Asao T. Clinicopathological characteristics of poorly differentiated adenocarcinoma of the colon and rectum. Hepatogastroenterology. 2004;51:1698–702.

15. Pimentel-Nunes P, Dinis-Ribeiro M, Ponchon T, Repici A, Vieth M, De Ceglie A, Amato A, Berr F, Bhandari P, Bialek A, et al. Endoscopic submucosal dissection: European Society of Gastrointestinal Endoscopy (ESGE) Guideline. Endoscopy. 2015;47:829–54.

16. Endo S, Takehara Y, Tanaka J, Hidaka E, Mukai S, Omoto T, Ishida F, Kudo SE. Complete laparoscopic surgery for early colorectal cancer after endoscopic resection. Asian J Endosc Surg. 2013;6:338–41.

Figures

Figure 1

Colonoscopic findings A 20 mm-sized pedunculated polyp was found in the descending colon, with a depression at the apex of the head.
Figure 2

Histopathological findings a) Shows HE staining. It is mainly non-solid, poorly differentiated adenocarcinoma, and adenoma is also found around it. Tumor cells are judged to be level 2 because they have not reached the expected Haggitt line. (Dotted line indicates Haggitt line) b) HE stain (10x). Adenoma was partially observed in non-solid poorly differentiated adenocarcinoma.
Figure 3

Podoplanin immunostaining (20x). Multiple tumor cells are found in the lymphatics.