Local recurrence of T1a rectal cancer following radical endoscopic mucosal resection: A case report

KEI TAMA MATSUMOTO1, NOBUHISA MATSUHASHI1, TAKAO TAKASHASHI1, TOSHIYUKI TANAHASHI1, SATOSHI MOTSUI1, TOMONARI SUETSUGU1, JESSE YU TAJIMA1, TAKEHARU IMAI1, HISASHI IMAI1, YOSHIHI TANAKA1, KAZUYA YAMAGUCHI1, NATSUOKO SUZUI2, TATSUHIKO MIYAZAKI2 and KAZUHIRO YOSHIDA1

1Department of Surgical Oncology and 2Pathology Division, Gifu University School of Medicine, Gifu, Gifu 501-1194, Japan

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Abstract. We herein report a case of local recurrence of T1a rectal cancer following radical endoscopic mucosal resection (EMR). A 63-year-old man underwent EMR for a 0-IIa lesion of the Ra portion of the rectum. The findings on pathological examination were tub1, T1a (SM1, 420 µm), ly0 and v0, and the EMR had been considered a transitional procedure. Colonoscopy performed 26 months after EMR revealed a submucosal tumor (SMT) near the EMR scar in the left wall of the Ra portion of the rectum. An abdominal enhanced computed tomography scan revealed infiltration of the thickness of the wall with limited extramural extension, and a lymph node 10 mm in diameter. Endoscopic ultrasound-guided fine-needle aspiration also indicated a SMT on the left side of the Ra portion of the rectum that extended from the submucosal layer to beyond the serosal layer, and a lymph node sized 17x11 mm to the left of the Ra portion near the oral side 2 cm from the SMT. The pathological findings confirmed the SMT to be an adenocarcinoma with a metastatic lymph node. Local and lymph node recurrence of rectal cancer following radical EMR was diagnosed, and laparoscopic ultra-low anterior resection, D3 lymph node dissection and a diverting ileostomy were performed. The pathological findings of the excised specimen were T3 (A/SS), ly0, v3, PN1b, pPM0, pDM0, pRM0 (100 µm) and pN0 (0/15). XELOX therapy was administered for 6 months postoperatively as adjuvant chemotherapy, and there has been no recurrence during the first 12 months of follow-up.

Introduction

In recent years, endoscopic mucosal resection (EMR) has been indicated for the treatment of superficial, early-stage colorectal cancer due to its minimal invasiveness and excellent results in terms of clinical outcome (1,2). In addition, taking into consideration the possibility of incomplete tumor removal due to the difficulty in resecting lesions sized >2 cm by EMR, endoscopic submucosal dissection has been adapted for use in this procedure (1,3). Cases of local recurrence following radical EMR are extremely rare. We herein report an extremely rare case of recurrence at 26 months following lesion removal by a curative endoscopic procedure performed according to the 2016 Colon Cancer Treatment Guidelines of the Japanese Society for Cancer of the Colon and Rectum (JSCCR guidelines) for the treatment of colorectal cancer.

Case report

A 63-year-old man underwent EMR for a 0-IIa lesion in the Ra portion of the rectum in October, 2014. The pathological findings (Fig. 1) were tub1, T1a (SM1, 420 µm), ly0 and v0, and the EMR was considered to be a transitional procedure. Colonoscopy performed 26 months after EMR revealed a submucosal tumor (SMT) near the EMR scar in the left wall of the Ra portion of the rectum. An abdominal enhanced computed tomography scan revealed infiltration of the thickness of the wall with limited extramural extension, and a lymph node 10 mm in diameter. Endoscopic ultrasound-guided fine-needle aspiration also indicated a SMT on the left side of the Ra portion of the rectum that extended from the submucosal layer to beyond the serosal layer, and a lymph node sized 17x11 mm to the left of the Ra portion near the oral side 2 cm from the SMT. The pathological findings confirmed the SMT as adenocarcinoma with a metastatic lymph node. Local recurrence and lymph node recurrence of rectal cancer following radical EMR was diagnosed, as the SMT and lymph node were...
in proximity to the EMR scar and the pathological findings revealed adenocarcinoma in both the SMT and the lymph node. Laparoscopic ultra-low anterior resection, D3 lymph node dissection and a diverting ileostomy were performed. The operative time was 3 h and 41 min, and the blood loss was 5 ml. The resected specimens (Fig. 5A and B) included an SMT lesion at the Ra portion of the rectum, and the periphery of the tumor exhibited a hard consistency from the submucosal layer extending beyond the serosal layer. The pathological findings (Fig. 6) were T3 (A/SS), ly0, v3, PN1b, pDM0, pPM0, pRM0 (100 µm) and pN0 (0/15). XELOX therapy was administered for 6 months as adjuvant chemotherapy, and this was followed by chest and abdominal enhanced computed tomography scans every 6 months. The final follow-up appointment was performed during December 2017, and there has been no recurrence in the first 12 months after surgery.

Discussion

In recent years, EMR has been indicated for the treatment of superficial, early-stage colorectal cancer due to its minimal invasiveness and excellent results in terms of clinical outcome. The decision on the use of endoscopic resection is made in accordance with the JSCCR guidelines (1). Endoscopic resection is recommended in tumors with little possibility of lymph node metastasis and in tumors with a size and site (M or SM of <1,000 µm infiltration degree) permitting excision in bulk. The size and the visual system used to assess the tumor is not considered in the use of endoscopic resection. In addition, the criteria for additional resection of pT1 (SM) colon cancer that has already been resected (4) are also being investigated. It is desirable to add surgical resection in cases of a positive vertical stump. Furthermore, following histological examination of the obtained specimens, if the pathological findings reveal i) SM infiltration degree of ≥1,000 µm; ii) positive lymphovascular invasion; iii) poorly differentiated adenocarcinoma, signet ring cell carcinoma, or mucinous adenocarcinoma; or iv) conglobate (budding) lesion grade 2/3 in cases of advanced infiltration, intestinal resection with lymph node dissection should be considered as an additional treatment. These criteria were applied to the 0-IIa lesion in the Ra portion of the rectum in the present case. The pathological findings at the time of EMR were tub1>tub2, the depth of invasion was SM1 (420 µm), lymphatic invasion and venous invasion on hematoxylin and eosin (H&E)-stained sections were both negative, and the resection margin was also negative. The tumor was resected in bulk. For these reasons, the JSCCR guidelines were followed, but local recurrence was discovered at 26 months after radical EMR. The pathological findings of the initial treating physician at our hospital were reviewed. Although the physician had based the diagnosis on H&E staining alone, the presence of lymphatic invasion and venous invasion was diagnosed based on D2-40 staining and Victoria blue (VB)-H&E staining (Fig. 7A and B) and the recurrence was diagnosed as ly1 and v1. Therefore, the accurate preoperative diagnostic was tub1>tub2, T1a (SM1, 420 µm), ly1 (D2-40) and v1 (VB-H&E).

Cases of local recurrence following tumor removal by an endoscopic curative procedure according to the JSCCR guidelines are extremely rare. This is a valuable case: It is the 3rd reported case, to our knowledge, of local recurrence of T1a rectal cancer following radical EMR in Japan, with the other two cases reported by Nobuharu et al (5) and Yosuke et al (6).

In addition, the case reported by Nobuharu et al (5) suggested that, if the mucosal muscle layer is disrupted by the diffuse spread of cancer tissue, the risk of metastasis is high. The case reported by Yosuke et al was considered on a representative level, and the total percentage of cancer in the specimens was not examined. If the infiltrated portion is somewhat close to the resection margin, it may be possible for cross-end positivity or lymphovascular invasion positivity to be diagnosed if other sections of the total sample are considered.

The usefulness and limitations of using special staining methods, such as D2-40 and VB-H&E, to determine lymphovascular invasion has been frequently reported in colon cancer. Lymphovascular invasion is the most important risk factor of metastasis (7), but diagnosis may be subjective depending on the pathologist (8). Akiko et al (9) reported that reproducibility of the diagnosis of lymphovascular invasion...
was problematic in specimens stained with H&E, and it is better to consider the use of special staining methods to improve the diagnostic accuracy. Toshiki et al (10) reported on the results of special staining in 139 lesions in patients with SM cancer.
and found that the diagnosis of lymph node metastasis by evaluating lymphovascular invasion based on H&E staining exhibited a sensitivity of 75.0% and a specificity of 50.3%, whereas the use of special staining exhibited a sensitivity of 93.8%, a specificity of 46.0%, a positive predictive value of 12.9% and a negative predictive value of 98.9%. Thus, the improved sensitivity of special staining may be meaningful, as the absence of lymph node metastasis may be considered almost certain if the specimen is negative for lymphovascular invasion.

In summary, we herein reported an extremely rare case of cancer recurrence 26 months after the removal of a rectal tumor by EMR performed according to the JSCCR guidelines. The use of H&E staining alone may make it difficult to diagnose lymphovascular invasion; therefore, the addition of special staining must be considered when the extent of lymphovascular invasion is unclear on H&E staining.

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Availability of data and materials

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Authors' contributions

NM and KM conceived and designed the study. NM, KM, TaT, ToT, SM, TS, JT, TI, HI, YT, KYa and KYo acquired the data. NM, KM, TaT, NS and TM analyzed and interpreted the data. NM and KM drafted the manuscript. NM, KM, TaT and KYo critically revised the manuscript for important intellectual content. KYo supervised the study and acquired the data. All the authors have read and approved the final version of this manuscript.

Ethics approval and consent to participate

Not applicable.

Patient consent for publication

Written informed consent was obtained from the patient for the publication of the case details and accompanying images.

Competing interests

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received honoraria for lectures from Takeda Pharmaceutical Co., Ltd. All remaining authors declare that they have no competing interests to disclose.

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