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Report

Regression of Rectal Mucosa-associated Lymphoid Tissue (MALT) Lymphoma after *Helicobacter pylori* Eradication

Ye DING[1], Kentaro YOSHINAGA[1], Masataka MARUYAMA[2], Yoichi IMAI[1], Masayuki SHISEKI[1], Naoki MORI[1], Akihiro MASUDA[3], Masanao TERAMURA[1] and Toshiko MOTOJI[1]

[1]Department of Hematology, Tokyo Women's Medical University School of Medicine
[2]Genki Plaza Medical Center for Healthcare
[3]Department of Surgical Pathology, Tokyo Women's Medical University

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Mucosa-associated lymphoid tissue (MALT) lymphoma is an extranodal B-cell neoplasm, and gastric MALT lymphoma is the most common form of the disease. Conversely, rectal MALT lymphoma is extremely rare, and it is still unclear whether *Helicobacter pylori* (*H. pylori*) infection is associated with the condition, as is the case with gastric MALT lymphoma. Interestingly, *H. pylori* treatment caused rectal MALT lymphoma to regress in several previous cases. In this report, we present the case of a 62-year-old male who was diagnosed with rectal MALT lymphoma involving *H. pylori* infection, which was confirmed by a urea breath test, and achieved complete remission after *H. pylori* eradication.

Key Words: rectum, MALT (mucosa-associated lymphoid tissue) lymphoma, *Helicobacter pylori* (*H. pylori*), antibiotic therapy

Introduction

Mucosa-associated lymphoid tissue (MALT) lymphoma, a primary extranodal B-cell lymphoma, is a distinct clinical and pathological entity. MALT lymphoma develops in diverse anatomical locations such as the stomach, salivary gland, thyroid gland, lung, and breast while colorectal involvement is extremely rare[1]. The histopathogenesis of MALT lymphoma within the upper gastrointestinal tract is considered to be closely related to *Helicobacter pylori* (*H. pylori*) infection[2)~6)]. It is unclear whether *H. pylori* infection is associated with colorectal MALT lymphoma; however, *H. pylori* treatment resulted in the regression of colorectal MALT lymphoma in several studies[7)~9)]. Here, we present the case of a patient with rectal MALT lymphoma who achieved complete remission after *H. pylori* eradication.

Case report

A 62-year-old Japanese male with no relevant medical history was referred to our institution for colonoscopy because of hematochezia. As a result, a broad-based protrusion, which displayed a nodular surface and ulceration, was detected in his rectum below the peritoneal reflection (Rb) (Fig. 1A). Biopsy specimens demonstrated the diffuse infiltration of centrocyte-like cells and a lymphoepithelial lesion within the lamina propria (Fig. 2A), and an immunohistochemical examination showed that these cells were positive for CD20 and CD79 and negative for CD3, CD5, CD10, cyclin D1, and CD43 (Fig. 2B). Furthermore, the cells displayed a skew towards kappa light chain expression, which resulted in a diagnosis of MALT lymphoma. However, the biopsy specimens did not contain any *H. pylori*. No enlarged lymph nodes or hepatosplenomegaly were detected during a physical examination, and laboratory examinations did not detect anemia or increased levels of lactate dehydrogenase or soluble interleukin-2 receptor (sIL-2R). Positron emission tomography/computed tomography (PET-CT) demonstrated

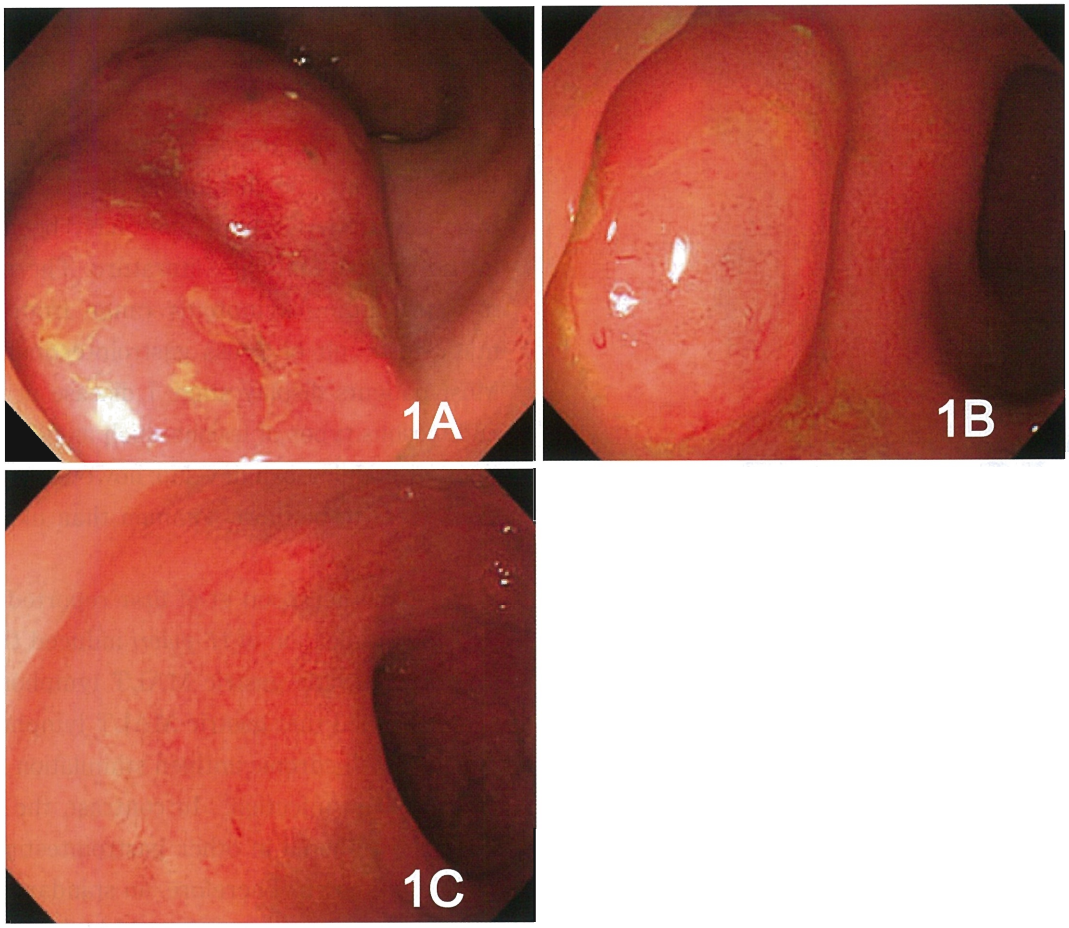

Fig. 1 Colonoscopy findings. (1A) Colonoscopy findings at diagnosis. A broad-based protrusion with a nodular surface and ulceration was found in the Rb segment of the rectum. (1B) Colonoscopy performed at 4 months after the *H. pylori* eradication found that the tumor, which now displayed a smooth surface, had regressed, and the biopsy samples did not contain any lymphoma cells. (1C) Regression of the tumor at 8 months after the *H. pylori* eradication.

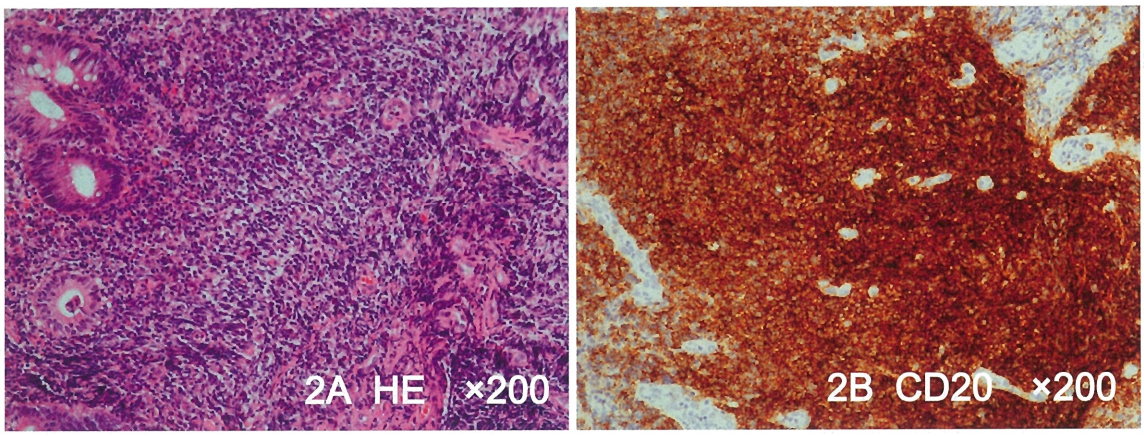

Fig. 2 Microscopic findings of the biopsy specimens. (2A) Diffuse infiltration of centrocyte-like cells within the lamina propria. (2B) The cells were CD20-positive.

fluorodeoxyglucose (FDG) accumulation in the rectum (Fig. 3A). A diagnosis of rectal MALT lymphoma was made, and the patient's clinical stage was determined to be IE according to the modified

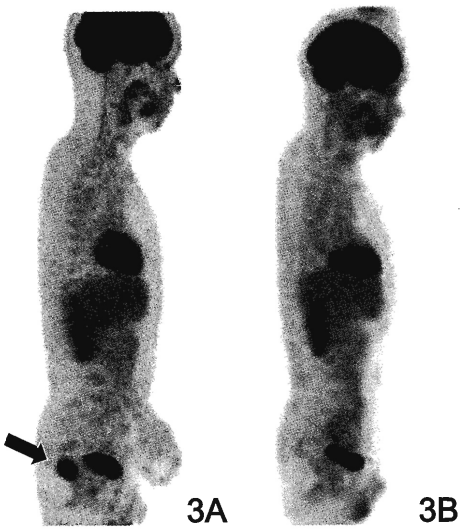

Fig. 3 PET-CT findings. (3A) PET-CT at diagnosis. FDG accumulation was detected in the rectum. (3B) No FDG accumulation was detected at 9 months after the *H. pylori* eradication (B).

Ann Arbor classification.

Since a positive result was obtained in a urea breath test, *H. pylori* eradication was attempted with a 7-day course of omeprazole, amoxicillin, and clarithromycin. A subsequent urea breath test performed one month after the end of this treatment produced a negative result, indicating that the eradication had been successful. Repeated colonoscopy performed at 4 months after the end of the treatment showed that the tumor, which now displayed a smooth surface without ulceration, had regressed (Fig. 1B), and the biopsy specimens obtained at this point did not contain any lymphoma cells. The tumor regression was confirmed at 8 months after the end of the treatment (Fig. 1C). A PET-CT examination performed at 9 months after the treatment did not detect any FDG accumulation (Fig. 3B). The patient is currently under follow-up, and no evidence of relapse has been observed.

Discussion

MALT lymphoma is histologically characterized by the diffuse infiltration of small lymphoid cells (centrocyte-like or monocytoid-like cells), the infiltration of lymphoma cells around the epithelium (lymphoepithelial lesions), and the proliferation of plasma cells in the lamina propria of the mucosa. The clinical behavior of MALT lymphoma has been reported to be favorable[1]. Although MALT lymphoma can occur throughout the gastrointestinal tract, most lesions develop in the stomach. Primary rectal MALT lymphoma is extremely rare, and, to the best of our knowledge, less than 40 cases of primary rectal MALT lymphoma have been reported in the English language literature. The most common presenting symptoms range from asymptomatic to occult or gross gastrointestinal bleeding. Most patients display stage I disease at diagnosis, and various types of lesions, such as polyps, ulcerations, or nodules, can develop; however, polypoid lesions seem to be more common than ulcerative lesions[1)8)~10)].

Since Wotherspoon et al first reported (in 1993) that the eradication of *H. pylori* induced the regression of low-grade gastric MALT lymphoma, it has been assumed that gastric MALT lymphoma is associated with chronic antigen stimulation by persistent *H. pylori* infection[2]. In contrast, the causes of MALT lymphoma in other gastrointestinal organs remain unknown. Therefore, no standard therapies for patients with extragastric MALT lymphoma of the gut have been established. The current therapies for rectal MALT include surgical resection, surgical resection followed by chemotherapy, combination treatment with radiotherapy and chemotherapy, endoscopic resection, endoscopic resection followed by antibiotic treatment, antibiotic treatment alone, and observation[1]. The case reported by Matsumoto et al[9] and our case both involved rectal MALT lymphoma regression after *H. pylori* eradication alone, suggesting that *H. pylori* infection is associated with rectal MALT lymphoma. However, no reports have provided direct evidence for the existence of *H. pylori* in the rectum. Furthermore, several studies have reported the regression of rectal MALT lymphoma after *H. pylori* eradication therapy in *H. pylori*-negative patients[11)~13)]. More interestingly, Dohden et al[14] reported the regression of rectal MALT lymphoma after the administration of levofloxacin, and Hori et al[15] observed rectal MALT lymphoma regression after gatifloxacin treatment, while the successful eradication of *H. pylori* had no therapeutic effect. These findings suggest the possi-

ble involvement of microorganisms other than *H. pylori* in the development of rectal MALT lymphoma, although no such organisms have been detected.

Conclusion

H. pylori eradication should be attempted as the initial therapy for patients with rectal MALT lymphoma, as it might have a therapeutic effect, is non-invasive, and has few adverse effects. Radio/chemotherapy or surgery can then be considered if necessary. Further studies and the accumulation of rectal MALT lymphoma cases are required to confirm the pathogenetic role of *H. pylori* in the condition, to find other microorganisms that might be associated with rectal MALT lymphoma, and to elucidate its pathogenetic mechanisms.

The authors indicate that no conflicts of interest exist.

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Helicobacter pylori 除菌治療後完全寛解に至った直腸 MALT リンパ腫の 1 例

[1]東京女子医科大学医学部血液内科学
[2]こころとからだの元気プラザ
[3]東京女子医科大学病理診断科

丁　曄[1]・吉永健太郎[1]・丸山　正隆[2]
今井　陽一[1]・志関　正幸[1]・森　直樹[1]
増田　昭博[3]・寺村　正尚[1]・泉二登志子[1]

直腸原発の粘膜関連濾胞辺縁帯（MALT）リンパ腫は稀であり，胃原発と異なりいまだ治療法も定まっていない．今回，我々は *Helicobacter pylori*（*H. pylori*）除菌治療のみによって完全寛解に至った症例を経験したので報告する．症例は 62 歳男性，下血，便秘にて受診し，下部内視鏡（CF）検査にて直腸 Rb に浅いびらんを伴う粘膜下腫瘍を認めた．生検病理にて中型リンパ球の増殖が粘膜固有層に認められ，CD20（＋），CD79（＋），cyclinD1（－），CD10（－）で MALT リンパ腫と診断した．PET-CT で直腸局所のみに FDG の集積を認め，Ann Arbor stage I であった．尿素呼気試験が陽性のため *H. pylori* に対する除菌治療を行い，呼気試験の陰性化を認めた．MALT リンパ腫は 4 ヵ月後の内視鏡所見，生検病理および 9 ヵ月後の PET-CT でも病変が消失し，完全寛解と判断した．限局期の直腸 MALT リンパ腫では，*H. pylori* の除菌は試みてもいい治療法と思われた．*H. pylori* 陰性でも除菌で寛解に至った報告もあり，*H. pylori* の陽性率（頻度），除菌効果，他の微生物の関与を含めて今後の症例の蓄積が必要である．