## Mantle cell lymphoma presenting as multiple lymphomatous polyposis spreading widely to the small intestine and diagnosed by double-balloon endoscopy



Fig. 1 a, b Chromoendoscopy with indigo carmine dye. a Multiple lymphomatous polyposis in cecum and ileocecal valve. b Multiple lymphomatous polyposis in the rectum.



Fig. 2 a-c Doubleballoon endoscopy. a Flat, dish-like lesions in the ileum. b Multiple small polypoid lesions in the ileum. c Several giant folds in the terminal ileum. d High-power view of biopsy specimen from ileum: diffuse proliferation of small to medium-sized cleaved lymphocytes which were diagnosed as mantle cell lymphoma (H\&E, orig.
mag. $\times 400$ ).

It is well recognized that gastrointestinal spread of mantle cell lymphoma (MCL) frequently involves the colorectum and the stomach [1]. However, involvement of the small intestine has not yet been sufficiently studied. This is a first report of MCL in which involvement of the entire small intestine was studied by doubleballoon endoscopy (DBE).
A 62-year-old man with a positive fecal occult blood test underwent total colonoscopy. Colonoscopic pictures showed numerous small polypoid lesions throughout the colorectum. Polypoid lesions were conspicuous in the cecum, ileocecal valve (O Fig.1a), and rectum (O Fig. 1b). Biopsy specimens taken from polypoid lesions revealed diffuse proliferation of small to medium-sized cleaved lymphocytes which were positive for CD5, CD20, and cyclin-D1. We made a diagnosis of MCL presenting as multiple lymphomatous polyposis (MLP). Esophagogastroduodenoscopy showed antral gastritis and duodenitis, and biopsy specimens taken from the affected sites revealed MCL. DBE was undertaken in order to investigate the extent of the MCL. DBE from the anal approach showed flat, dishlike lesions (O Fig.2a), multiple small polypoid lesions ( $\mathbf{O}$ Fig. 2b), and giant folds ( 0 Fig. 2c) in the ileum. Biopsy specimens taken from the ileal lesions also revealed MCL ( 0 Fig. $\mathbf{2 d}$ ). There were no remarkable lesions in the jejunum when examined using the oral approach. Abdominal CT study showed multiple lymph node swellings and hepatosplenomegaly. Biopsy specimens taken from bone marrow revealed MCL. Systemic chemotherapy with cyclophosphamide, doxorubicin, vincristine, prednisone (CHOP), and rituximab was started and partial response was demonstrated after eight cycles. The patient was alive without disease progression 20 months later.
The endoscopic characteristics of gastrointestinal tract involvement in MLP have been described in the colorectum and gastritis in the stomach [1]. In the present case we demonstrate various endoscopic features of small-intestinal involvement in MCL, such as flat, dish-like lesions, multiple small polypoid lesions, and giant folds. DBE was useful for diagnosing the extent of MCL involvement of the small intestine.

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