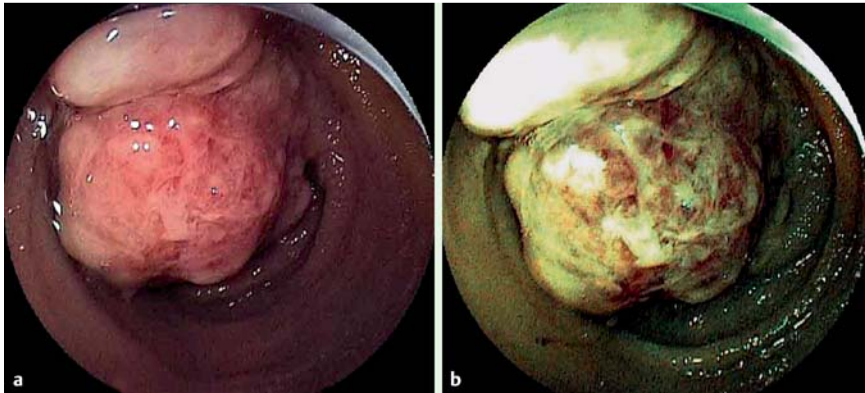
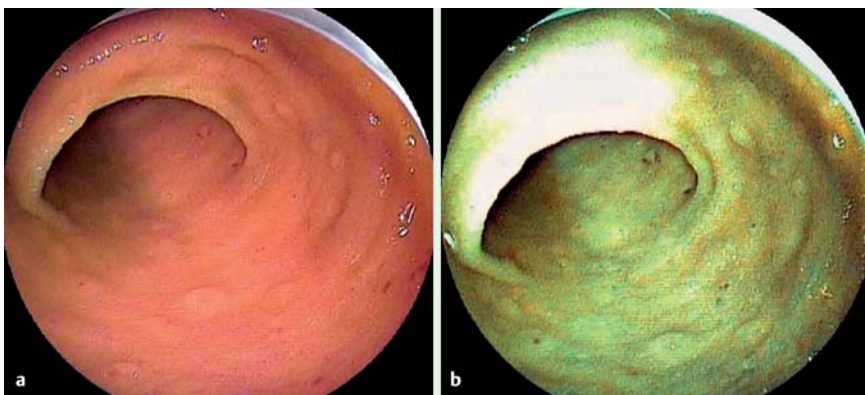


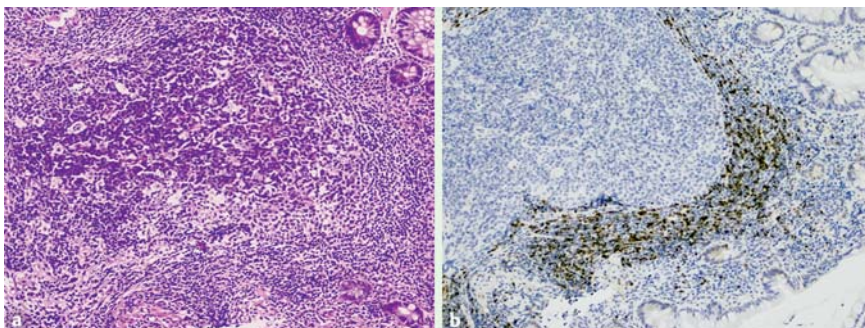
## Intestinal mantle cell lymphoma observed by double-balloon endoscopy with Fuji Intelligent Chromo Endoscopy



**Fig. 1** a Double-balloon endoscopy showed a reddish irregular elevated mass lesion with giant folds in the distal ileum. b Fuji Intelligent Chromo Endoscopy (FICE) highlighted superficial vessels.



**Fig. 2** a Multiple small polypoid lesions were spread in the distal ileum. b Fuji Intelligent Chromo Endoscopy (FICE) identified them clearly as small whitish nodules.



**Fig. 3** a Endoscopic biopsy specimens taken from the mass lesion and small polypoid lesions showed follicular structures within the thick mantle layer under the mucosa, consisting of medium-sized abnormal lymphoid cells with dense nuclei. b Immunohistochemical analysis revealed that the medium-sized abnormal lymphoid cells were positive for cyclin D1.

Mantle cell lymphoma rarely occurs in the gastrointestinal tract, although other B-cell-derived non-Hodgkin lymphoma often occurs there. According to previous reports, gastrointestinal spread of mantle cell lymphoma frequently involves the colorectum and stomach; reports of small-intestinal involvement are rare. Consistent with preceding reports [1–3], the endoscopic appearance of colorectal and small-intestinal spread of mantle cell lymphoma shows multiple lymphomatous polyposis in the lower ileum and colorectum. Earlier reports have described cases of gastrointestinal mantle cell lymphoma using advanced endoscopic imaging technologies [1–3], but observation of mantle cell lymphoma of the small intestine using double-balloon endoscopy with Fuji Intelligent Chromo Endoscopy (FICE) has not been reported to date. We report a rare case of intestinal mantle cell lymphoma diagnosed by capsule endoscopy and double-balloon endoscopy with FICE, providing a new mode of endoscopic imaging of this type of gastrointestinal lymphoma.

A 66-year-old man was admitted to our hospital for anemia and tarry stool. Upper gastrointestinal endoscopy and total colonoscopy showed no remarkable changes. Capsule endoscopy showed elevated lesions in the distal ileum, and double-balloon endoscopy was undertaken for further examination. Double-balloon endoscopy showed a reddish irregular elevated mass lesion with giant folds in the distal ileum and FICE highlighted superficial vessels (● Fig. 1).

Multiple small polypoid lesions were present in the distal ileum and FICE could identify them clearly as small whitish nodules (● Fig. 2).

Endoscopic biopsy specimens taken from the mass lesion and small polypoid lesions showed follicular structures within the thick mantle layer under the mucosa, consisting of medium-sized abnormal lymphoid cells with dense nuclei (● Fig. 3a). Immunohistochemical analysis revealed that the medium-sized abnormal lymphoid cells were positive for cyclin D1 (● Fig. 3b), CD5, CD20, Bcl-1 and Bcl-2, but negative for CD3 and CD10. Based on

histopathological and immunophenotypic findings, a diagnosis of intestinal mantle cell lymphoma was made.

Endoscopy\_UCTN\_Code\_CCL\_1AC\_2AC

**Competing interests:** None

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