# Can artificial intelligence help to detect dysplasia in patients with ulcerative colitis?

A 72-year-old man with an 18-year history of pancolitis had been visiting our hospital regularly for 12 years. He was taking oral mesalamine and mercaptopurine to sustain clinical remission. Surveillance colonoscopy was performed using high-definition endoscopy (CF-HQ290ZI; Olympus, Tokyo, Japan) with an artificial intelligence (AI)-based detection system (EndoBRAIN-EYE; Cybernet Systems, Tokyo, Japan).

The AI-based detection system identified two lesions in the sigmoid colon (▶ **Fig. 1 a, b**) and indicated them with bounding boxes (▶ **Video 1**).

Histological examination of the biopsy specimens showed that both of the lesions were characterized by low-grade dysplasia (▶ **Fig. 2 a, b**).

Patients with longstanding ulcerative colitis (UC) have a higher risk of colorectal cancer than do individuals in the general population [1]. UC-associated dysplasia is often flat with an unclear boundary from the surrounding tissues, making it difficult to detect [2]. AI-based polyp detection systems are used during colonoscopy to increase lesion detection [3]. The EndoBRAIN-EYE system can reportedly identify colorectal lesions with high accuracy in non-UC patients [4, 5]. However, its use for the detection of dysplasia in patients with UC has not been previously reported.

With a target biopsy strategy in UC surveillance, the ability to detect lesions depends on the endoscopist. AI has the potential to help non-expert endoscopists detect dysplasia in patients with UC.

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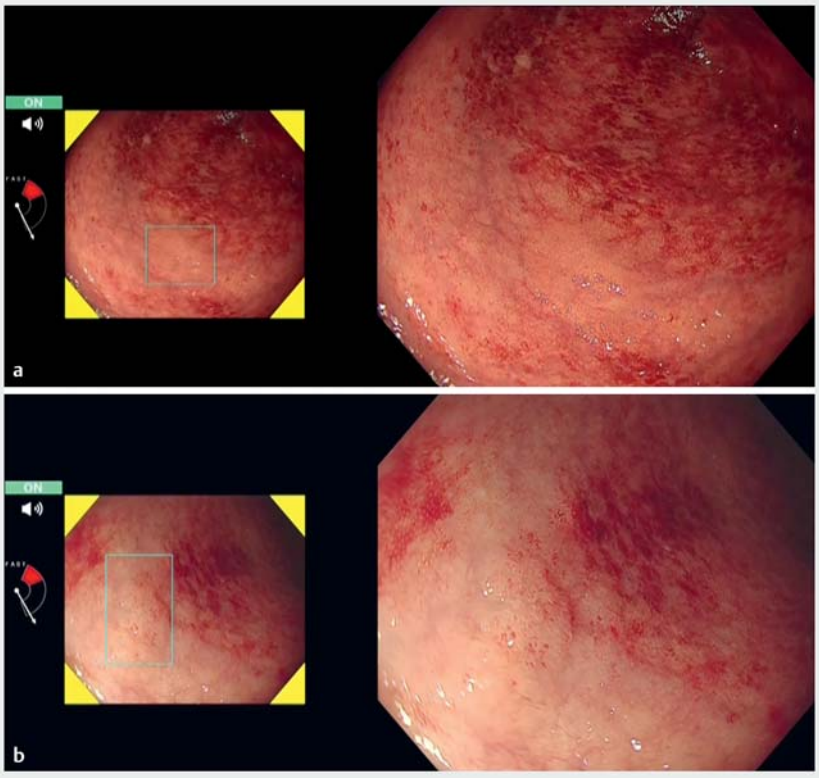
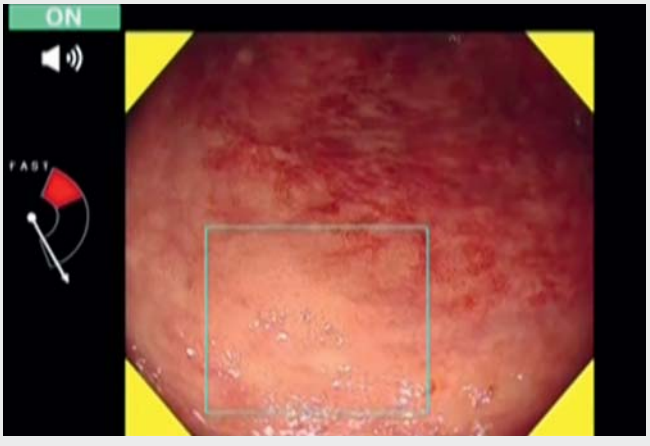
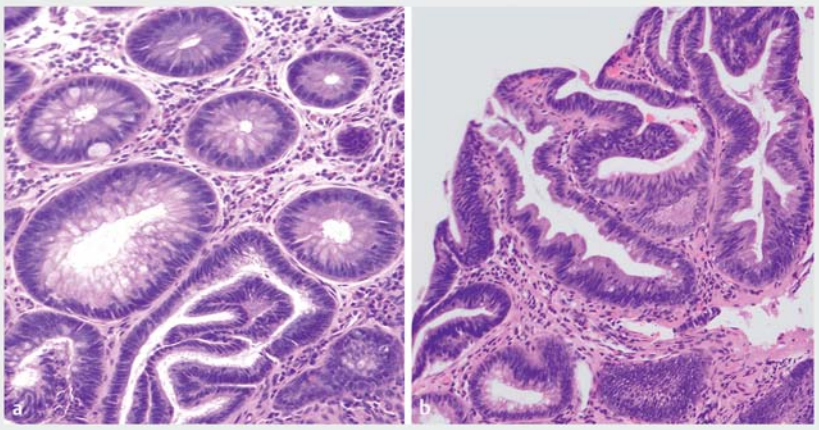



▶ **Fig. 1** The artificial intelligence-based detection system identified dysplasia. **a** First lesion. **b** Second lesion.




**Video 1** At the moment the artificial intelligence-based detection system identified the dysplasia, it displayed the four corners of the monitor in yellow and indicated boxes bounding the dysplasia.



▶ **Fig. 2** Histological examination showed an atypical tubular gland with low-grade dysplasia. **a** First lesion. **b** Second lesion.

## Competing interests

Shin-ei Kudo, Masashi Misawa, and Yuichi Mori received lecture fees from Olympus Corp. Shin-ei Kudo, Masashi Misawa, and Yuichi Mori have patents (Japan Patent JP 6059271 and JP 6580446) licensed to Cybernet systems and Showa University. Kazuo Ohtsuka reports personal fees and nonfinancial support from Olympus outside the submitted work. Kensaku Mori received a grant from Cybernet Systems.

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## Bibliography

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