Identification of a small, depressed type of colorectal invasive cancer by an artificial intelligence-assisted detection system

A 64-year-old man underwent surveillance colonoscopy with a computer-aided detection (CADe) system (EndoBRAIN-EYE; Cybernet Systems, Tokyo, Japan) [1]. The system identified a 5-mm slightly reddish lesion in the sigmoid colon. Spraying with indigo carmine enabled identification of a clearly depressed area on the lesion (▶ Fig. 1, ▶ Video 1). The lesion showed type V_I pit pattern, indicating high grade dysplasia or slightly invasive submucosal cancer [2]. Endoscopic mucosal resection was performed. Pathological examination showed a well-differentiated adenocarcinoma with slight invasion of the submucosal layer (▶ Fig. 2, ▶ Fig. 3, ▶ Fig. 4).

Artificial intelligence (AI) technology has regulatory clearance and is increasingly used during colonoscopy. A meta-analysis showed that CADe systems increase adenoma detection rates [3]. However, identifying subtle nonpolypoid lesions (e.g. 0–IIc type depressed lesions; laterally spreading tumors without granules) with CADe is still considered challenging. This is clinically relevant because a recent randomized trial found that such nonpolypoid tumors may be one of the causes of post-colonoscopy colorectal cancer [4]. Such lesions have greater
malignant potential than other tumor morphologies and are often overlooked because of their appearance [5]. To the best of our knowledge, this is the first report of detection of a depressed, type 0–IIc lesion by CADe in real time during clinical colonoscopy. This AI-assisted detection was of particular value because the lesion was found to be a submucosal-ly invasive colorectal cancer.

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Competing interests

Shin-ei Kudo, Masashi Misawa, and Yuichi Mori have received speaking honoraria from Olympus Corporation (Tokyo, Japan) and have ownership interest in the products of Cybernet Systems (Tokyo, Japan). Masashi Misawa, Shin-ei Kudo, and Yuichi Mori have patents (Japan Patent JP 6059271 and JP 6580446) licensed to Cybernet Systems and Showa University.

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