Early colorectal lesion (depressed type) detected using artificial intelligence

De novo colorectal cancer is a rare nonpapillary cancer in which the tumor invades the submucosal layer [1]. Unlike with the elevated type, early-stage detection is difficult, and, even if it is detected, the cancer is already advanced due to the rapid speed of invasion.

Recently, artificial intelligence (AI) has been used in clinical practice for tumor detection to improve the adenoma detection rate in superficial depressed tumors [2, 3]. We present the case of an 80-year-old man with a depressed tumor in the sigmoid colon.

Colonoscopy revealed a reddish depressed lesion in the sigmoid colon measuring 10 mm; on magnification with narrow-band imaging it was diagnosed as type 2B in the Japan NBI Expert Team (JNET) classification (Fig. 1) [4]. After administration of indigo carmine dye, the lesion became clearer and the lesion showed a well-defined depressed area (Fig. 2). Magnifying endoscopy with crystal violet staining revealed a type V pattern showing a mixture of IIa and III S with disordered arrangement (Fig. 3). Further, endocytoscopy showed disordered arrangement of the stained nuclei (EC3A in the EC classification) (Fig. 4) [5]. The endoscopic diagnosis was intramucosal carcinoma (“high-grade dysplasia” in the West), and therefore endoscopic resection was performed. The histological diagnosis was intramucosal carcinoma with curative resection (Fig. 5). In this case, Wise-Vision (NEC Corporation, Tokyo, Japan) was used for the diagnosis, and the 0-IIc morphology was reliably detected using white-light and narrowband imaging (Video 1).

It is still rare to encounter a pure 0-IIc cancer in Japan. Most of the detected lesions are so-called 0-IIa depression with adenomatous histology, and de novo cancers are usually detected at the more advanced stage of submucosal deep invasive cancer with a 0-IIa+IIc morphology, which is an indication for surgery [1]. AI developed using data from flat and depressed types of cancer will be used worldwide to appropriately detect 0-IIc cancer at an early stage and treat it endoscopically, resulting in fewer patient deaths from colorectal cancer.

E-Videos

► Fig. 1 Depressed tumor in the sigmoid colon of an 80-year-old man. Using magnifying endoscopy with narrowband imaging, slightly irregular vessel and surface patterns were observed, and the lesion was diagnosed as type 2B in the Japan NBI Expert Team (JNET) classification.

► Fig. 2 After administration of indigo carmine dye, the demarcation of the lesion became clearer and the lesion showed a well-defined depressed area.

► Fig. 3 Magnifying endoscopy with crystal violet staining showed a type V pit at the margin of the lesion. In the depressed area, the pit pattern was diagnosed as type V (noninvasive pattern), showing a mixture of IIa and III S with disordered arrangement, and intraepithelial carcinoma was suspected.

► Fig. 4 Endocytoscopy showed disordered arrangement of the stained nuclei (EC3A by EC classification) [5].

► Fig. 5 Final histological diagnosis: well-differentiated tubular adenocarcinoma, pTis, negative for lymphovascular invasion, with negative horizontal and vertical margins.

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Competing interests
The authors declare that they have no conflict of interest.

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References

Bibliography
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