Early colorectal lesion (depressed type) detected using artificial intelligence

De novo colorectal cancer is a rare nonpolyloid 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 narrowband imaging it was diagnosed as type 2B in the Japan NBI Expert Team (JNET) classification [4]. After administration of indigo carmine dye, the demarcation of the lesion became clearer and the lesion showed a well-defined depressed area (Fig. 2). Magnifying endoscopy with crystal violet staining revealed a type Vi (noninvasive pattern) pit showing a mixture of llls and llls 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.
Competing interests

The authors declare that they have no conflict of interest.

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References


Acknowledgments

We would like to express our deep gratitude to Dr. Ryuji Hamamoto of the Division of Molecular Modification and Cancer Biology, National Cancer Center Research Institute, Cancer Translational Research Team, RIKEN Center for Advanced Intelligence Project for the development of AI.

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Endoscopy DOI 10.1055/a-1732-7197
ISSN 0013-726X
published online 2022
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Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany

E-Videos

Video 1 A case of a depressed type of early colorectal lesion detected using an AI system (Wise-Vision).