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, 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–I,lc 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.

Endoscopy_UCTN_Code_TTT_1AQ_2AB

Acknowledgment

We thank Dr. Trish Reynolds, MBBS, FRACP, from Edanz (https://jp.edanz.com/ac) for editing a draft of this manuscript.

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.

The authors

Shin-ei Kudo1, Masashi Misawa1, Yuichi Mori1, Yurie Kawabata1, Yasuharu Maeda1, Hideyuki Miyachi1, Kensaku Mori2
1 Digestive Disease Center, Showa University Northern Yokohama Hospital, Japan
2 Clinical Effectiveness Research Group, Institute of Health and Society, Faculty of Medicine, University of Oslo, Oslo, Norway
3 Graduate School of Informatics, Nagoya University, Nagoya, Japan

Corresponding author

Shin-ei Kudo, MD, PhD
Digestive Disease Center, Showa University, Showa University Northern Yokohama Hospital, 35-1 Chigasaki-chuo, Tsuzuki, Yokohama, 224-8503, Japan
kudos@med.showa-u.ac.jp

References


Bibliography

Endoscopy 2022; 54: E592–E593
DOI 10.1055/a-1704-8103
ISSN 0013-726X
published online 21.12.2021
© 2021. Thieme. All rights reserved.
Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany

ENDOSCOPY E-VIDEOS
https://eref.thieme.de/e-videos

Endoscopy E-Videos is an open access online section, reporting on interesting cases and new techniques in gastroenterological endoscopy. All papers include a high quality video and all contributions are freely accessible online. Processing charges apply (currently EUR 375), discounts and waivers acc. to HINARI are available.

This section has its own submission website at https://mc.manuscriptcentral.com/e-videos

Fig. 4 Photomicrograph showing that one cancerous gland (red arrow) invaded the submucosal layer beyond the muscularis mucosa (desmin immunostaining).