

Flat colorectal adenocarcinoma: a worrisome false negative of artificial intelligence-assisted colonoscopy

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The development of artificial intelligence (AI) systems in the field of colorectal endoscopy is currently booming, colorectal cancer being, by its frequency and severity, a serious public health concern.

In terms of image analysis, AI is indeed able to perform many tasks automatically, including lesion detection, classification, and segmentation, and to combine them [1]. Lesion detection is thus the starting point of the whole chain to eventually choose the most appropriate patient treatment. Large-scale studies have demonstrated the superiority of AI-assisted detection over the usual detection by gastroenterologists, mainly for the detection of sub-centimeter polyps [2,3].

However, we have shown that a recent computer-aided detection system (CADe) such as the ENDO-AID software in combination with the EVIS X1 video column (Olympus, Tokyo, Japan) may have difficulties in the detection of flat lesions such as sessile serrated lesions (SSLs) and non-granular laterally spreading tumors (LST-NGs) [4,5]. This represents a major challenge because, in addition to their shape being difficult to identify for the human eye in practice and where AI assistance would thus be of great value, these rare lesions are associated with advanced histology.

We herein report the case of a patient with a 2.5 cm pseudo-depressed LST-NG tumor of the transverse colon, not detected correctly by CADe (figure 1 and video 1). This lesion includes a 15 mm Kudo Vi demarcated area (figures 2 and 3). Pathological examination suggests an adenocarcinoma invading the muscularis mucosae (figures 4 and 5).

It is essential for endoscopists to continue to properly analyze the colonic mucosal surface. It remains a major challenge for diagnostic endoscopy not to miss such flat lesions, which may be invasive cancers and for which endoscopic treatment could allow the patient to be cured.

References:

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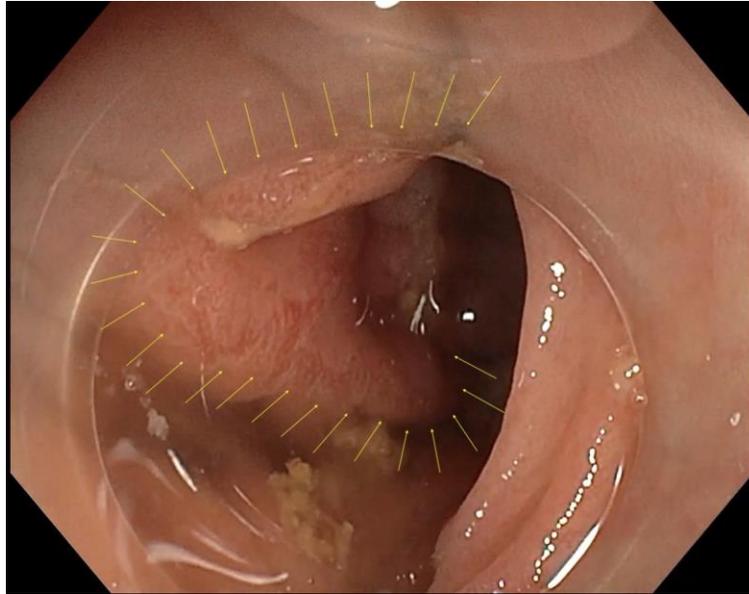


Figure 1: White light view of the laterally spreading tumor with no detection by CADE. (yellow arrows showing the real boundaries of the lesion)

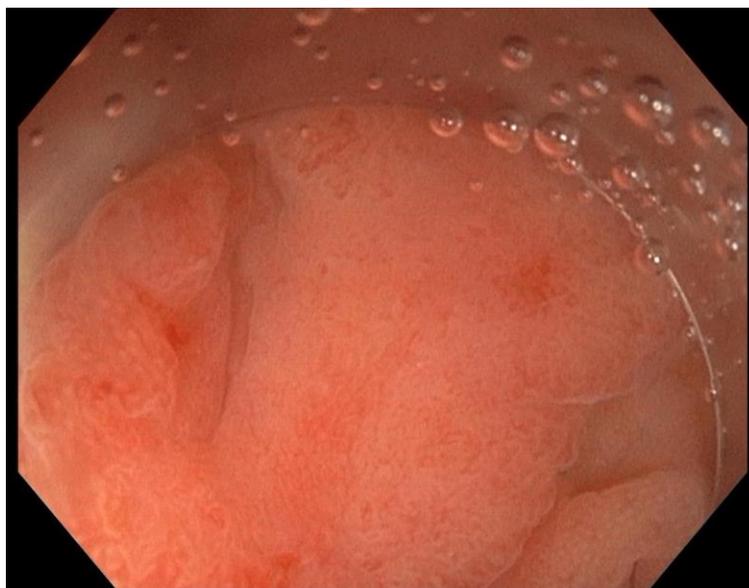


Figure 2: White light corresponding view of the lesion (focus).

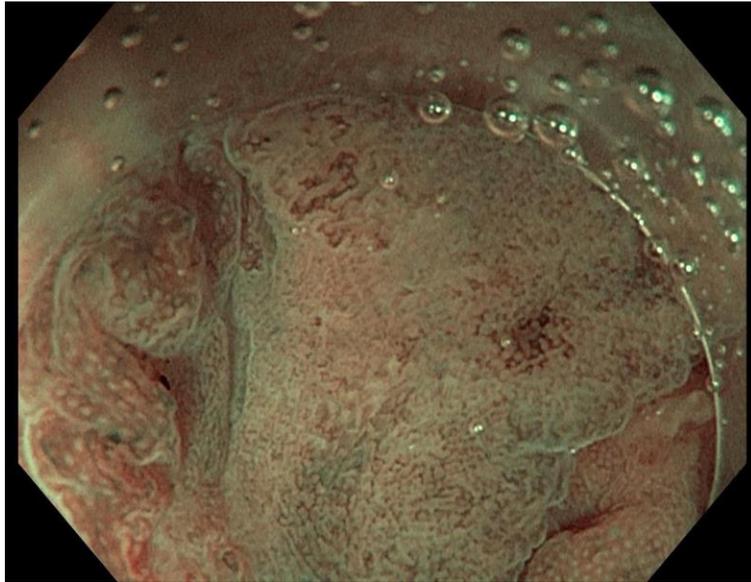


Figure 3: NBI corresponding view of the lesion (focus).

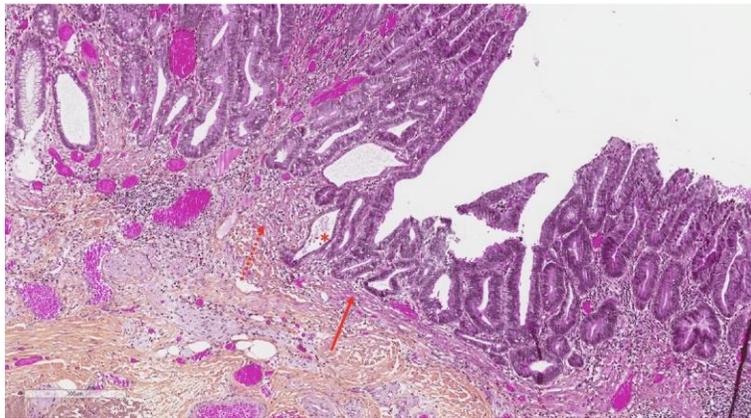


Figure 4: Microscopic examination of the resection specimen (HES staining, x70 magnification): red star showing adenocarcinomatous gland, solid line red arrow showing intact muscularis mucosae, dotted line red arrow showing fragmented muscularis mucosae.

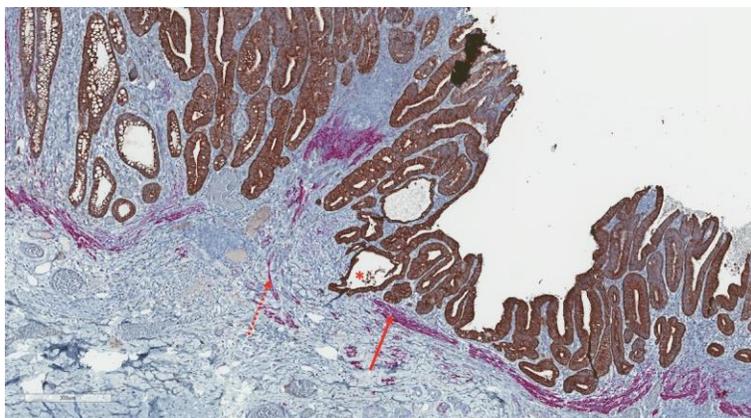


Figure 5: Same examination with IHC staining, x70 magnification.

Video 1: Endoscopic diagnosis of the non-granular laterally spreading tumor (red arrow) not correctly detected by the CADe system.

Video Text:

- Transverse colon carcinoma not detected by CADe (red arrow)
- NBI view of the LST-NG