

Response to Artificial intelligence-based colorectal polyp histology prediction using narrow-band image-magnifying colonoscopy: a stepping stone for clinical practice

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See “Artificial intelligence-based colorectal polyp histology prediction using narrow-band image-magnifying colonoscopy: a stepping stone for clinical practice” by Ji Young Chang, on page 699–700.

We would like to thank Dr. Chang for her thoughtful commentary to our study on the artificial intelligence based colorectal polyp histology prediction using narrow-band image (NBI)-magnifying colonoscopy.¹ In our study, we compared the accuracy of a developed artificial intelligence-based polyp histology prediction (AIPHP) method to the NBI International Colorectal Endoscopic (NICE) classification and pathologic results. We have tried to respond to the comments and questions by Dr. Chang in as much detail as possible.

Dr. Chang draw attention to a similar study reported by a Japanese research team that investigated the endoscopic microvascular density using magnifying NBI images via image-editing software, especially focusing on epithelial tumors.²

In our study, the accuracy of the AIPHP was influenced by polyp size whereas that of the endoscopic microvascular density was not. One possible explanation of this difference is that unlike the Japanese study in which they investigated exclusively adenomatous polyps or carcinomas, we recruited hyperplastic and diminutive adenomatous polyps as well. The other difference is that the mean polyp size was 28 ± 17 mm in the Japanese study whereas the mean size of the hyperplastic polyps

(3.9 ± 1.8 mm) and the mean size of the neoplastic polyps (11.2 ± 12.9 mm) in our study was much smaller. Another possible reason is why our AIPHP accuracy results, especially in the diminutive polyp subgroup, were worse than in the bigger subgroups is that the diminutive polyps are mostly hyperplastic and covered with mucous surfaces. The adherent mucous disturbs ability to analyze the vascular pattern by AIPHP procedure. The mucous cover and the whitish shape is one reason why we got less precise histologically predictive results by AIPHP program. To overcome to this problem, we plan to add the mucous surface as a new feature for the next-generation AIPHP programs.

We respond two points with regard to the issue raised by Dr. Chang that both hyperplastic and sessile serrated lesions (SSLs) correspond to NICE I, therefore it is almost impossible to distinguish the two by NICE classification, which we used instead of the Japan NBI Expert Team classification.³ First, in our study, the accuracy of the NICE evaluation was high, which was partly due to the small number ($n=3$) of SSLs. Second, whether our new-generation AIPHP could discriminate between SSLs and hyperplastic polyps will be validated via further prospective investigations involving a larger group of SSLs.

Conflicts of Interest

The authors have no potential conflicts of interest.

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