Detection of Nonpolypoid Colorectal Neoplasia Using Magnifying Endoscopy in Colonic Inflammatory Bowel Disease

Shiro Oka, MD, PhD[a], Shinji Tanaka, MD, PhD[a,*], Kazuaki Chayama, MD, PhD[b]

KEYWORDS

- Colitis-associated dysplasia/cancer • Inflammatory bowel disease
- Ulcerative colitis • Image-enhanced endoscopy • Narrow band imaging
- Autofluorescence imaging • Magnifying endoscopy

KEY POINTS

- Most nonpolypoid colorectal neoplasms (NP-CRNs) are visible, and their detection can be facilitated by the use of chromoendoscopy.
- Chromoendoscopy using indigo carmine, in turn, also augments our further evaluation of the border and pit pattern of the lesion.
- Magnifying endoscopy can assist us to further visualize the surface pattern, although chronic inflammation and its sequela in patients with inflammatory bowel disease (IBD) make the use of the pit pattern analysis less useful.
- In Japan, at present, efforts are given to clarify the merit for random biopsy.
- A nationwide randomized controlled trial is ongoing to clarify whether target biopsy or random step biopsy is effective for the detection of NP-CRN.

INTRODUCTION

Patients with inflammatory bowel disease (IBD) have a high risk of colitis-associated dysplasia and cancer.[1,2] These types of dysplasia and cancer, as compared with sporadic adenoma/carcinoma, seem to have a distinct growth pattern, which can be flat,

Disclosure of interests: None of the authors have any financial relationships to disclose relevant to this publication.
[a] Department of Endoscopy, Hiroshima University Hospital, 1-2-3 Kasumi, Minami-ku, Hiroshima 734-8551, Japan; [b] Department of Gastroenterology and Metabolism, Hiroshima University, Hospital, 1-2-3 Kasumi, Minami-ku, Hiroshima 734-8551, Japan
* Corresponding author.
E-mail address: colon@hiroshima-u.ac.jp

Gastrointest Endoscopy Clin N Am 24 (2014) 405–417
http://dx.doi.org/10.1016/j.giec.2014.03.011 giendo.theclinics.com
1052-5157/14

multifocal, or anaplastic.[3–7] Therefore, it is important that careful surveillance with colonoscopy is performed for all patients with IBD and, more frequently, for those considered to be at high risk.[8–12] Traditionally, flat dysplasia in ulcerative colitis (UC) has been considered to be detectable only by using random biopsy specimens of mucosa that appeared unremarkable during endoscopy.[13–15] However, recent studies have shown that most of them are visible; thus, their detection as nonpolypoid colorectal neoplasms (NP-CRNs) is an integral component in the prevention of colitic cancer.[9,16–18]

Unlike dysplasia-associated lesions or masses, which are readily visible using conventional endoscopy,[19] the detection of NP-CRN can be more difficult. NP-CRN in colitic IBD (cIBD) is often present simply as redness or a granular patch of mucosa that may not be readily distinguishable from the surrounding inflamed mucosa. Because it is often difficult to identify NP-CRN in cIBD using white light endoscopy, random blind biopsies are still commonly practiced, especially in Western countries, to potentially help detect these lesions. An alternative to random biopsy is to enhance the appearance of NP-CRN by using image-enhanced endoscopy and, in turn, to target the biopsy on areas that appear abnormal.

Several recent trials have evaluated dye-based image enhanced endoscopy (chromoendoscopy),[20–28] magnifying endoscopy,[16,29–33] and equipment-based image-enhanced endoscopy (IEE)[34–45] to detect NP-CRN in cIBD. Of these techniques, the indigo carmine dye spray IEE has been shown to effectively increase the detection of areas suspected to contain NP-CRN and to delineate the border and surface of suspected and obvious lesions.[46] Equipment-based IEE is a promising, but unproven, method that is designed to visualize small vessels and minute mucosal patterns. Of the currently available equipment-based IEE: narrow band imaging [NBI; Olympus, Tokyo, Japan], flexible spectral imaging color enhancement [Fujifilm, Tokyo, Japan], blue laser image [Fujifilm, Tokyo, Japan], autofluorescence imaging [AFI; Olympus, Tokyo, Japan], and i-scan [Pentax, Tokyo, Japan], clinical trials on the diagnosis of NP-CRN in cIBD have been published only for NBI and AFI.[34–45]

In this article, the authors describe the present status of the use of IEE to diagnose NP-CRN using magnifying colonoscope and illustrate their practice at the Hiroshima University Hospital. The authors have collated a few cases to provide examples of their practice. The authors do not reiterate data reporting on the utility of chromoendoscopy as Subramanian and Bisschops have summarized them.

THE PREVALENCE OF NP-CRN IN PATIENTS WITH IBD

Data show that nonpolypoid colorectal lesions are common in patients with IBD. The true prevalence of NP-CRN in UC is difficult to estimate with the present endoscopic modality. Several studies provide a general estimate. Sada and colleagues[16] reported that with surveillance colonoscopy in 1115 patients with UC, 39 colitic dysplasias or cancers in 31 patients were detected; 30% of dysplasias (6 of 20) were flat, and 16% of cancers (3 of 19) were depressed lesions. Toruner and colleagues[17] reported that among 635 patients with IBD, 36 dysplasias were detected; 24 (67%) were nonpolypoid and 12 (33%) were polypoid. Rutter and colleagues[18] reported that 77% of 110 colitic dysplasias or cancers in 525 patients with UC were detected endoscopically, with 23% being flat. In an investigation by the Japanese Ministry of Health, Labor, and Welfare, 42 lesions (79%) were polypoid and 11 lesions (21%) were nonpolypoid. Other reports have shown that more NP-CRN were detected and diagnosed using magnifying endoscopy as compared with chromoendoscopy.[16,28–33]