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EDITORIAL

- 322 Screening for colorectal cancer in patients with inflammatory bowel disease. Should we already perform chromoendoscopy in all our patients?

Huguet JM, Suárez P, Ferrer-Barceló L, Iranzo I, Sempere J

REVIEW

- 326 Stepwise evaluation of liver sectors and liver segments by endoscopic ultrasound

Sharma M, Somani P, Rameshbabu CS, Sunkara T, Rai P

ORIGINAL ARTICLE

Observational Study

- 340 Polysomnographic assessment of respiratory disturbance during deep propofol sedation for endoscopic submucosal dissection of gastric tumors

Urahama R, Uesato M, Aikawa M, Yamaguchi Y, Hayano K, Matsumura T, Arai M, Kunii R, Isono S, Matsubara H

Prospective Study

- 348 Submucosal injection of platelet-rich plasma in endoscopic resection of large sessile lesions

Lorenzo-Zúñiga V, Moreno de Vega V, Bartolí R, Marín I, Caballero N, Bon I, Boix J

META-ANALYSIS

- 354 Endoscopic retrograde cholangiopancreatography in cirrhosis - a systematic review and meta-analysis focused on adverse events

Mashiana HS, Dhaliwal AS, Sayles H, Dhindsa B, Yoo JW, Wu Q, Singh S, Siddiqui AA, Ohning G, Girotra M, Adler DG

CASE REPORT

- 367 Tight near-total corrosive strictures of the proximal esophagus with concomitant involvement of the hypopharynx: Flexible endoscopic management using a novel technique

Dhaliwal HS, Kumar N, Siddappa PK, Singh R, Sekhon JS, Masih J, Abraham J, Garg S

Contents

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Screening for colorectal cancer in patients with inflammatory bowel disease. Should we already perform chromoendoscopy in all our patients?

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Abstract

Patients with inflammatory bowel disease (commonly known as IBD) have a greater risk of colorectal cancer than the general population. Therefore, they are included in special programs for screening and follow-up. Chromoendoscopy, which has a high diagnostic yield in the detection of neoplasia, is generally the recommended endoscopy technique. However, this procedure does have some disadvantages (long examination time, need for optimal bowel preparation, specialist training), which increase its cost. How then can we overcome these barriers? First, it is necessary to educate hospital managers and directors of the advantages of chromoendoscopy in patients with IBD. Second, at least one endoscopist per center should be a specialist in the technique. Third, we should train nursing staff in the preparation of the dye. Finally, each examination should be given the time it needs. Even though clinical practice guidelines do not yet recommend the use of virtual imaging techniques such as narrow band imaging, a recent study reported no differences between the two approaches for the detection of tumors. Therefore, we believe that all patients should undergo chromoendoscopy. In the future, centers without access to dyes or where other barriers exist should at least perform narrow band imaging.

Key words: Colorectal Cancer; Inflammatory bowel disease; Chromoendoscopy; Surveillance; Narrow band imaging

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Core tip: Patients with inflammatory bowel disease are included in special programs for screening and follow-up of colorectal cancer. It is generally recommended that endoscopy be performed using chromoendoscopy, which has a high diagnostic yield for detection of the disease. However, chromoendoscopy does have a series of disadvantages. While some clinical practice guidelines do not yet recommend the use of virtual imaging techniques such as narrow band imaging, a recent study reported that there were no differences between the two approaches for detection of neoplastic lesions. Therefore, we recommend that all inflammatory bowel disease patients undergo chromoendoscopy.

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INTRODUCTION

Patients with inflammatory bowel disease (IBD) have a greater risk of colorectal cancer (CRC) than the general population^[1]. Therefore, it is clear that these patients should be included in special programs for screening and follow-up, as attested to in the recommendations of scientific societies and a recent review by Huguet *et al.*^[2-4]. The general recommendation for endoscopy is that the procedure used should be chromoendoscopy^[3-6].

Chromoendoscopy is an imaging technique that uses contrast agents to identify abnormalities in the colonic mucosa. Dysplastic lesions are better highlighted by the addition of topical dyes. Chromoendoscopy has the advantage of detecting an early lesion other than dysplasia associated lesion or mass^[7]. Chromoendoscopy is usually performed with methylene blue 0.1% or indigo carmine 0.03% to 0.5%.

Cecal intubation should be performed using a white-light endoscope. The colonic mucosa should then be stained by spray aspirating the excess fluids, carefully evaluating the mucosa, and examining each segment before applying dye in the next one^[2].

CHROMOENDOSCOPY VS WHITE LIGHT ENDOSCOPY VS NARROW BAND IMAGING

Several studies have evaluated the superiority of chromoendoscopy with respect to white light endoscopy^[8]. A recent review compared the diagnostic yield of high-definition white light endoscopy, chromoendoscopy,

Table 1 Disadvantages of chromoendoscopy (Adapted from Marion J and Sands B^[17])

Operator barriers:
Training of fellows, gastroenterologists, nurses, and staff
Unknown learning curve
Identifying clinically relevant lesions
Operational barriers:
Availability of dye, equipment
Billing and reimbursement
Time requirement
Prep quality
Confounding of findings by inflammation
Knowledge barriers:
Uncertain natural history of dysplasia detected by CE
Uncertain implications of prior surveillance findings for management

and narrow band imaging (NBI) for detection of cancer in patients with IBD by means of a meta-analysis of the existing literature^[9]. The authors found that chromoendoscopy was superior to white light endoscopy for detection of dysplasia in IBD. No differences in diagnostic yield were demonstrated for NBI in comparison with other modalities^[9]. Therefore, we have sufficient evidence to recommend implementation of this technique in digestive endoscopy units, as recently shown by Shukla *et al.*^[10].

The cost of chromoendoscopy is increased by its disadvantages. It is time-consuming, requires optimal bowel preparation, and is subject to adverse effects caused by application of dye to the intestinal mucosa. In addition, the endoscopist must be specially trained (Table 1). How then can we overcome these barriers? First, it is necessary to educate hospital managers and directors of the advantages of chromoendoscopy in patients with IBD. Second, at least one endoscopist per center should be a specialist in the technique. Third, we should train nursing staff in the preparation of the dye. Finally, each examination should be given the time it needs.

These are some of the reasons why chromoendoscopy is not universally used for CRC screening in patients with IBD. A Japanese study found that only half of those surveyed used the technique^[11]. The recommended alternative to chromoendoscopy is high-definition video-colonoscopy and serial colon biopsy (4 every 10 cm)^[5], which is also time-consuming if the biopsy specimens are taken as appropriate every 10 cm. In addition, potentially malignant lesions observed during the procedure must be biopsied. Preparation must also be optimal to ensure high-quality imaging. However, the technique is not subject to the possible adverse effects of dyes and does not require special training.

Moussata *et al.*^[12] recently reported that in selected patients, chromoendoscopy should be accompanied by conventional biopsy. The authors conclude that despite their low yield, random biopsies should be performed in association with chromoendoscopy in patients with IBD and a personal history of cancer, concomitant primary sclerosing cholangitis, or a tubular colon during

colonoscopy^[12].

A study carried out in Spanish units with a special interest in chromoendoscopy evaluated the real-world effectiveness of the technique. The rate of non-detection of dysplasia with white light endoscopy was 40/94 (incremental yield of 57.4% for chromoendoscopy). The rate of detection of dysplasia was similar for both experts and nonexperts (18.5% vs 13.1%, $P = 0.20$). The authors conclude that chromoendoscopy has a high diagnostic yield for the detection of neoplasia, irrespective of the technology used and the experience available at a specific center. Furthermore, optical diagnosis of chromoendoscopy is very accurate for ruling out dysplasia especially when the technique is performed by an expert^[13].

Clinical practice guidelines do not yet recommend NBI-type virtual imaging techniques for endoscopy in CRC screening^[3]. Similarly, the SCENIC Consensus Statement does not recommend their use, and in Statement 6, the recommendation is that when performing surveillance with image-enhanced high-definition colonoscopy, NBI is not suggested in place of chromoendoscopy^[5]. A Spanish study published in 2011 compared NBI with chromoendoscopy for the detection of colitis-associated intraepithelial neoplasia. The study was prospective, randomized, and crossover in design, and patients underwent both chromoendoscopy and NBI in a random order. The authors concluded that NBI is a useful technique for the detection of dysplasia in patients with long-standing IBD and offers several advantages, namely, efficiency, ease of use, and speed. However, in NBI a relatively high number of cases of intraepithelial neoplasia may go undetected with the result that many patients could go undiagnosed. Therefore, the authors consider that chromoendoscopy should still be considered the technique of choice for detecting dysplasia in patients with long-standing IBD^[14].

Nevertheless, recent evidence suggests that NBI-type techniques could be as effective as chromoendoscopy for the detection of dysplasia and CRC. Thus, a recent clinical trial compared the yield of chromoendoscopy with that of virtual chromoendoscopy using NBI in patients with a long history of ulcerative colitis and found no differences between the two techniques for detection of tumors. The authors concluded that given the longer extraction time of chromoendoscopy and easier applicability of NBI, the latter could replace classic chromoendoscopy^[15]. Autofluorescence imaging, on the other hand, has not shown any advantages over chromoendoscopy^[16].

CONCLUSION

We concur with Shukla *et al.*^[10] on the need for more studies, particularly longitudinal studies to clarify the role of chromoendoscopy in achieving the objective of reducing morbidity and mortality among patients

with colitis-associated CRC, while reducing the number of unnecessary colectomies in patients with clinically insignificant lesions. Similarly, we should stress the need for studies comparing chromoendoscopy and NBI. If both techniques are similarly effective for the detection of neoplasia, the previously mentioned advantages of NBI could lead it to replace chromoendoscopy.

Therefore, we believe that the answer to the question we ask in the title of this editorial 'Should all patients still undergo chromoendoscopy?' is yes. We should perform chromoendoscopy in all patients with IBD who are to be screened and followed up for CRC. In the future, centers without access to dyes or where other barriers exist should at least perform NBI on this patient population.

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