

Image-Enhanced Small Bowel Capsule Endoscopy: Promises and Caveats

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Enteroscopia por cápsula com cromoescopia virtual: promessas e a realidade

Palavras Chave

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Small bowel capsule endoscopy (SBCE) is an established diagnostic method in patients with obscure gastrointestinal bleeding, polyposis syndromes and in selected patients with Crohn's disease and celiac disease. One of the major drawbacks of SBCE is the suboptimal lesion imaging which impairs its diagnostic yield. Here lies the possible importance of image-enhanced or virtual chromoendoscopy (VC) technology that assists, nowadays, most of the reading software of the available devices.

Flexible spectral imaging color enhancement (FICE, 3 settings) is one of the best known of these technologies,

and it is applied to the PillCam SB 1/SB 2 video capsule system (Given Imaging Ltd., Yoqneam, Israel).

In a recent meta-analysis, Yung et al. [1] aimed to verify the clinical utility of FICE in improving delineation and detection rate for small bowel pathological findings in capsule endoscopy as compared to conventional reading. They included 8 (out of 13, mostly Portuguese and Japanese) studies: 3 “delineation” studies and 5 “detection” studies.

The authors concluded that, overall, the use of FICE did not significantly improve delineation or detection rate in SBCE, although FICE setting 1 performed better in angiectasia delineation and detection.

Besides that, FICE 1 shows promise in detecting more bleeding lesions in nondiagnostic SBCE and especially in patients who experience rebleeding [2, 3]. This topic must be confirmed with more studies, since two examinations have already proven to be better than one, even without VC.

The blue mode (for PillCam) and ALICE (for MiroCam) technologies applied to SBCE have little evidence supporting their use.

In this issue of *GE Portuguese Journal of Gastroenterology*, Ribeiro da Silva et al. [4] present us the first study about the utility – in delineation of lesions – of the 3 “col-

or modes” of the MiroCam System. One hundred elementary lesions (angiectasias, ulcers, and erosions) were scored 1–4 (worst to better) by 6 readers who compared conventional images and the ones provided by each of the color modes. The authors concluded that color modes did not perform better than conventional images for the delineation of the lesions.

The authors also present us with a fair discussion of the literature and the limitations of the study, namely the somewhat smaller relevance of delineation studies compared with diagnostic accuracy studies and some methodological shortcomings (some of which I address in my last paragraph). Even so, this is a valuable first *proof of concept* study on the utility of VC in the MiroCam System.

So, VC in SBCE overall seems to be useless at the moment; with the exception of FICE 1, which proved useful in angiectasias delineation/detection and may be recommended in negative and/or repeated SBCE for rebleeding [2].

Delineation and, mostly, detection, of significant lesions with VC is important, but the ultimate quest is if it increases the diagnostic accuracy of SBCE and if this modifies clinical management of the patients. This remains largely unknown.

In the future, even at the delineation/detection level, much attention is needed to improve and standardize the methodology of studies. What is an experienced reader? How many are needed? How to “blind” them to video findings and VC modes? What is the gold standard test? How to score lesions and reduce the subjectivity of ratings? Will full video reading be obligatory? And does “more findings” necessarily translate into improved clinical outcomes?

Disclosure Statement

The author has no conflicts of interest to declare.

References

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