Available online at www.sciencedirect.com
SCIENCE DIRECT®
Digestive and Liver Disease
Digestive and Liver Disease xxx (2006) xxx–xxx
www.elsevier.com/locate/dld

Commentary

Capsule endoscopy reviewed by a nurse: Is it here to stay?

A. Caunedo Alvarez, J.M. García-Montes, J.M. Herrerías *

Gastroenterology Service, Virgen Macarena University Hospital, Seville, Spain

See related article on pages XXX–XXX

In less than 5 years capsule endoscopy (CE) has become the first technique elected for the study of small bowel disease. This is a non-invasive technique that allows visualising the whole mucosa of the small bowel and has shown its effectiveness in patients with obscure digestive haemorrhage [1] and also in other intestinal pathologies such as Crohn's disease, N-said enteropathy, intestinal diseases specific in elder patients or polyposis syndromes [2–5].

However, this new technique has limitations in that it does not permit biopsies to be taken, nor therapeutic procedures. Although these problems may be difficult to solve, it would not be surprising that, in short or medium term, the new technologies will allow their partial resolution. On this basis, some authors have suggested that non-medical staff (a well-trained nurse) could pre-check a recorded video, indicating abnormal or doubtful images found, and then a practitioner would interpret them [6–9] (Bossa, Levinthal, Niv, Fernández-Urién). In the Bossa et al. [6] article published in this number, a qualified nurse and an endoscopist review independently 39 consecutive CE studies, and there is a high level of agreement in the results (index $k > 0.85$). There were only some discrepancies in minor findings, such as minimum mucosal abnormalities missed by the nurse. All the images detected by the endoscopist were also found by the nurse and, for that reason, the authors suggest that the endoscopist could limit his work to the revision of only those images previously indicated by the nurse.

Some characteristics of CE make it specially indicated for this strategy. Firstly, it is not a procedure depending on the endoscopist's skills and therefore the expertise of the person who reviews the tape does not imply more or less risk of complications, discomfort nor quality of image. This argument had already been used against the same approach in conventional endoscopy such as rectosigmoidoscopy in colorectal cancer screening achieved by trained nurses. This was probably one of the reasons used to reject this strategy in most of the European countries although a majority of the articles published were favourable [10,11]. Secondly, CE can be fully reviewed at any moment and the training to interpret it, at least to distinguish between normal and abnormal images, is not long. Further to the already mentioned Bossa et al. [6] article, two other articles have been published on this topic with similar results [7,8]. Levinthal et al. [7], with 20 reviewed explorations, give a result of 93% of abnormalities found by the nurse. Niv and Niv [8], in a study with 50 explorations, got full agreement between the nurse and the endoscopist in 96.8% of significant lesions. In Spain, Fernández-Urién et al. [9] have presented similar results, although slightly less favourable (matching: 86%) in a series of 20 explorations.

In any case, it would be necessary to take some factors into account when evaluating this strategy. The conditions that give this percentage of agreement between nurses and endoscopists are probably optimum, because the data is obtained from a protocol in which the operator is highly motivated and the nurses have much experience in conventional endoscopy (over 13 years in the Bossa et al. study).

Yet, in the last two studies referred to, contrary to what happened in the Bossa et al. [6] series, important abnormalities were missed by the nurse (2/27 in the Levinthal et al. series and 3/50 in the Niv and Niv's series). Although the prevalence of these false negatives was low (7.4% and 6%), the number is not negligible, furthermore since it is not due to limitations of the technique itself, as in other cases, but to a strategy directed to reduce cost in personnel. In this sense, only Niv and Niv study includes in its results a cost–benefit analysis with: estimated cost of 1 h of the practitioner and the nurse; time spent by the practitioner and the nurse to review the recording as well as time spent by the practitioner to review the images selected by the nurse and time needed

DOI of original article:10.1016/j.dld.2006.03.019.
* Corresponding author. Fax: +34 95 5008805.
E-mail address: juanm.herrerias.sspa@juntadeandalucia.es (J.M. Herrerías).

doi:10.1016/j.dld.2006.03.023

to do the report. According to these authors, prior revision and selection of images carried out by a nurse would save approximately $324 per exploration. Obviously, this analysis depends on the cost-time of each professional that could considerably vary from one country to another. On the other hand, in their calculation, Niv and Niv have not taken into account the cost of the false negatives due to the pre-review by the nurse (6% in this series). Since the material and human cost of this procedure is rather high, this concept could reduce up to 20% the savings given by Niv and Niv.

On the other hand, there could be a medical–legal conflict, since the final responsibility of the correct diagnostic interpretation of any technique falls on the practitioner who elaborates and signs the report. In case the nurse misses significant lesions in the report to be afterwards reviewed by the practitioner, the responsibility of the diagnostic error could partially or totally fall on the latter. In this context, it is possible that some of the practitioners prefer to review the lecture of an exploration alone since they are the people responsible for the results, just as many patients could prefer their exploration be reviewed by a specialist even if it means additional cost.

So, the Bossa et al. article and others more recently published open a debate on the suitability of this strategy, quite attractive at first sight, but still with some aspects of controversy. Wide studies that would allow to determine the sensitiveness of the pre-review by non-medical staff with various operators, as well as strict analysis of cost-effectiveness in various means, will provide in the near future the evidence necessary to adequately weigh up this strategy.

Conflict of interest statement

None declared.

References

[1] Pennazio M, Santucci R, Rondonotti E, Abbiati C, Beccari G, Rossini FB, et al. Clinical outcome of patients with obscure gastrointestinal bleeding after capsule endoscopy: report of 100 consecutive cases. Gastroenterology 2004;126:643–53.

[2] Herrerías JM, Caunedo A, Rodríguez Téllez M. Capsule endoscopy in patients with suspected Crohn's disease in negative endoscopy. Endoscopy 2003;35:564–9.

[3] Goldstein JI, Eisen GM, Lewis B, Gralnek IM, Zlotnick S, Fort JG. Video capsule endoscopy to prospectively assess small bowel injury with celecoxib, naproxen plus omeprazole, and placebo. Clin Gastroenterol Hepatol 2005;3:133–41.

[4] Argüelles-Arias F, Caunedo A, Romero J. Utility of capsule endoscopy in pediatrics with suspicion of small bowel disorders. Endoscopy 2004;36:869–73.

[5] Schulmann K, Schmiegel W. Capsule endoscopy for small bowel surveillance in hereditary intestinal polyposis and non-polyposis syndromes. Gastrointest Endosc Clin N Am 2004;14:149–58.

[6] Bossa F, Cocomazzi G, Valvano MR, Andriulli A, Annese V. Detection of abnormal lesions recorded by capsule endoscopy: a prospective study comparing endoscopist's and nurse's accuracy. Dig Liver Dis, doi:10.1016/j.dld.2006.03.019.

[7] Levinthal GN, Burke CA, Santisi JM. The accuracy of an endoscopy nurse in interpreting capsule endoscopy. Am J Gastroenterol 2003;98:2669–71.

[8] Niv Y, Niv G. Capsule endoscopy examination—preliminary review by a nurse. Dig Dis Sci 2005;50:2121–4.

[9] Fernández-Urién I, Pérez N, Espinet E, Betés M, Herráiz M, Carretero C, et al. Capsule endoscopy interpretation: the role of physiciab extenders. In: Proceedings to 3rd Iberian meeting on capsule endoscopy. 2005.

[10] Vance M. The nurse colonoscopist—training and quality assurance. Gastrointest Endosc Clin N Am 2005;15:829–37.

[11] Smale S, Bjarnason I, Forgacs I, Prasad P, Mukhood M, Wong M, et al. Upper gastrointestinal endoscopy performed by nurses: scope for the future? Gut 2003;52:1090–4.