Capsule enteroscopy in India: early steps

The “technology transfer” of sophisticated medical devices is a valuable – although often costly – strategy for promoting health in developing nations. To benefit the target country, a device must address an unmet health problem and must reach the members of the population who need it. Local physicians must receive the education they require to master the device and must enjoy adequate technical support. In the case of a diagnostic device, therapeutic techniques (themselves often costly) must be available to treat a positive finding. In India, the technology transfer of newer endoscopic technologies is taking steps: over a 10-year interval, imports of flexible gastrointestinal endoscopes more than quadrupled, from 1,862 during the years 1991-94 to 9,590 during the years 2000-03.

Wireless capsule enteroscopy (CE) spread rapidly across the developed world since it was introduced in 2001. CE is now accepted as the optimal diagnostic technology for patients with “obscure” GI bleeding (OGIB), defined as bleeding from a source that is not detected by colonoscopy and esophagastroduodenoscopy. It has been estimated that in the United States and Western Europe, 1%-5% of GI bleeding is obscure, but in developing nations the incidence of OGIB is unknown.

The basic equipment for CE requires an investment of about US$29,000, and its effectiveness is directly related to the ability to accurately make the diagnosis based on reading of the 50,000 images gathered in traversing the small bowel. CE requires an investment in training (8 hours of physician education and 10 “proctored” CE studies). Electronic media, such as the internet-based web seminars (“webinars”) sponsored by Given Inc., the manufacturer of Pillcam™, are capable of supporting physician education from afar. Each CE exam requires a one-time-use disposable capsule camera (which costs US$450) and about 30-60 minutes of physician time to read and analyze the stored images.

In the current issue of the Journal, Gupta et al report the largest Indian experience of CE for OGIB to date. Overall, this retrospective study demonstrated a lesion “clearly explaining the clinical situation” in 52% of 154 patients, a yield which is in the range of what is reported in most previous studies. CE was nearly three times as likely to find positive results in patients with gross bleeding such as melena as in patients with truly occult bleeding (no visible evidence of blood loss), a difference which has also been reported. The incidence rates of tumors (6%) and multiple ulcers presumably suggestive of ileitis (13%) were similar to Western studies.

The current study differs from most previous investigations of OGIB by CE in two interwoven respects: the patients are on average 10-20 years younger (mean 47 years old) and vascular lesions were a less common etiology of OGIB (13% vs. approximately 40% in most prior studies). Lesions deemed “NSAID-induced” are more common (13%) than in most Western studies; however, the notorious difficulty of distinguishing NSAID-induced small bowel lesions from those due to other etiologies may explain the difference. Infectious etiologies were found in only two patients (hookworm and ascariasis).

Though the number of patients studied is relatively small, these observations suggest either that the etiologies of OGIB in India may differ somewhat from those reported in the West or that the population studied in this report may not be representative of a larger Indian population. Unfortunately, the authors omit demographic patient data (e.g., ethnic background, state of origin) and clinical data (e.g., severity of anemia, transfusion and hospitalization requirement), which would help clarify whether the results in this study can be generalized to the overall Indian population. The “gold standard” in all OGIB-CE studies is whether CE-directed intervention resolved the bleeding – a question that is not addressed by the authors.

Despite these unanswered questions, this report serves to confirm that CE can contribute to the diagnosis of OGIB in an Indian population, as it has in populations elsewhere on the globe. In time, experience will teach whether the diagnostic capability of CE in India differs from in Western populations.

As the authors make clear in their previous paper, the cost of CE will discourage dissemination in India. Currently there are only 30 CE installations in India (data courtesy of Given Imaging), which corresponds to one installation per 3.6 million people. There is no doubt that with further use and publication of results as in this report, the number of CE stations will expand. At this time in the United States there are 2,000 installations, serving a population roughly one-third the size of India’s, which attests to the usefulness of the CE examination. Ideally, early steps like those reported here will encourage further
“transfer” of CE technology so a larger Indian public can benefit from it.

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References

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