

First Central European Capsule Endoscopy Symposium, Visegrád, Hungary

June 30, 2006

Hardly any of the medical innovations seen in recent decades have given rise to so much interest and enthusiasm as the introduction of capsule endoscopy (CE). The method fulfilled every endoscopist's dream of being able to endoscopically examine not only the stomach and colon, but also the whole gastrointestinal tract. Five years after the introduction of CE into clinical gastroenterology, the method has become an established part of the diagnostic armamentarium.

This was the reason why during the 4th Central European Gastroenterology Meeting at Visegrád the scientific committee decided to organise a special symposium dedicated to CE. The special event held



Figure 2
Professor István Rácz (Györ; on the left) and Professor Rainer Schöfl (Linz), organisers and chairpersons of the First Central European Capsule Endoscopy Symposium

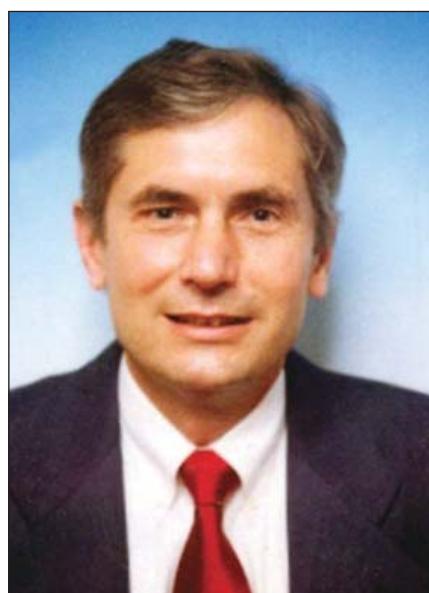


Figure 1
Professor István Rácz, MD, PhD
organiser of the Symposium



Figure 3
Speakers at the First Central European Capsule Endoscopy Symposium. From left to right: István Rácz (Györ), Živa Mrevlje (Ljubljana), Ewa Wronska (Warsawa), Jan Bureš (Hradec Králové), Miodrag Krstić (Beograd), Ronald Pulanić (Zagreb), Gaetano Iaquinto (Avelino) and Rainer Schöfl (Linz).

on 30th June 2006 was launched as the First Central European Capsule Endoscopy Symposium. The aim of the symposium was to give a general and updated overview of how CE is incorporated into the clinical work of the Central European Region. According to this idea the organisers invited one representative from each participating Central European country to this special programme (Austria, Croatia, Czech Republic, Hungary, Poland, Slovakia, Serbia-Montenegro, Slovenia and Italy). All of the representative experts were kindly asked to give a short summary of the own national results. The two hosts Dr. István Rácz from Györ, Hungary and Dr. Rainer Schöfl from Linz, Austria suggested the presenters also focus on a special point in their talk beside the presentation of the own national CE results.

According to this proposal Dr. Miodrag Krstić from Beograd presented a nice overview of the development of the CE technique. Dr. Živa Mrevlje from Ljubljana, Slovenia summarised which preparation methods are nowadays recommended before CE. Dr. Roland Pulanić from Zagreb, Croatia listed the accepted indications of CE, which are now the focus of the daily clinical routine. Dr. Rainer Schöfl gave one

of the most important lectures dealing with clinical consequences and patient outcome after small bowel CE. In his lecture, Dr. Jan Bureš from Hradec Králové, Czech Republic provided an overview about the methods available to avoid complications during CE. Experts today face the problem of how to localise the capsule in the small bowel. This was the topic touched on by Ewa Wronská from Warsawa, Poland. Dr. István Rácz overviewed the future of the CE and he presented some new indications of the technique. A special topic was covered by Gaetano Iaquinto from Avelino, Italy who summarised the recent results of CE in FAP patients. After the lectures, which also dealt with the own national results of each country, a very active twenty-minute-long discussion followed. In his closing remarks Dr. Rainer Schöfl summarised the new information and the current status of CE activity in our region and he expressed his wishes that this symposium was only the starting point for further CE meetings organised by the gastroenterologists of the Central European countries.

Professor István Rácz, MD, PhD
1st Department of Internal Medicine, Petz Aladár County Teaching Hospital, Györ
Organiser of the meeting

Abstracts

The English in the abstracts was not edited in the Editorial Office of the Journal.

CAPSULE ENDOSCOPY – HOW TO AVOID COMPLICATIONS? THE CZECH EXPERIENCE

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Wireless capsule endoscopy is a non-invasive and safe method. Complications are rare and usually minor only. They comprise technical failure, incomplete investigation of the entire small bowel (short lifespan of batteries), capsule retention and/or fracture. The first and most important way how to prevent complications is to comply with all contraindications of capsule endoscopy. Important point is to prevent gastric delay of the capsule. Real-time viewer (Olympus) can check online position of the capsule endoscope. The capsule can be placed (by a basket) or forward (by a special delivery device) from the stomach to the duodenum by means of gastroscope. Patency Capsule System (Given Imaging) was designed to prevent capsule retention in the small bowel. Capsule retention is reported in 0.75 to 10 %, due to small intestinal stenosis, strictures or large diverticula. Retained capsule should be retrieved by surgery or by double-balloon enteroscopy. Capsule endoscopy is available in the Czech Republic since December 2002. There are eight departments in the country using this method nowadays, our department has got both Given Imaging and Olympus System, and other units use Given Imaging. About 200 investigations were done so far, currently 80 capsule endoscopies are performed per year. The main problem is the fact that there is no reimbursement of capsule endoscopy by health insurance companies yet.

ACCEPTED INDICATIONS FOR SMALL BOWEL CAPSULE ENDOSCOPY. THE CROATIAN EXPERIENCE

Roland Pulanić

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Capsule endoscopy (CE) is indicated for evaluation of suspected small intestine disease. The accepted indications are:

1. Obscure gastrointestinal bleeding (OGB). CE has rapidly gained acceptance as a diagnostic tool to evaluate OGB, and has been shown to have a higher yield compared with push enteroscopy and small bowel radiology.
2. Crohn's disease (CD). CE is a useful tool to evaluate patients with CD or suspected CD. With the advent of capsule endoscopy, we are able to detect lesions quite frequently located in small bowel.
3. Nonsteroidal anti-inflammatory drug-induced mucosal abnormalities (NSAID-IMA). NSAID-IMA include overt or occult bleeding, abdominal pain, NSAID-associated strictures, ulcers and erosions. NSAID-induced small bowel injury is more common than previously appreciated, and CE provides a sensitive means to make this diagnosis.

4. Hereditary polyposis syndromes. The use of CE may be considered to evaluate patients at a high risk of small bowel neoplasia, particularly familial adenomatous polyposis and familial juvenile polyposis.
5. Celiac disease. CE is indicated in those patients that present with abdominal pain despite a proven gluten-free diet, and in patients who present with weight loss, abdominal masses, significant anemia, or hypoalbuminemia.

The Croatian experience is rather limited as the first endoscopic capsule was purchased by the Zagreb University Hospital Center in February 2006. Ten procedures have been performed to date. The indications included OGB (n=5); evaluation of patients with suspect Crohn's disease (n=3); and GIST (n=2). The site of bleeding was detected in three patients, and lesions indicative of Crohn's disease in one patient. For now, the capsule and examination are paid by the patient, the cost being not reimbursed by the Croatian Institute of Health Insurance.

THE PROBLEM OF CAPSULE LOCALISATION. THE POLISH EXPERIENCE

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Being able to determine the precise location of abnormalities found by capsule endoscopy in the gastrointestinal tract is vital for further endoscopic or surgical treatment. The time that elapses between the first duodenal image and the detection of the lesion compared to the total small bowel transit time provides some information; however, this method is imprecise. To overcome this problem a localisation algorithm has been developed. It is based on the relative strength of the signal received from the capsule by each of eight sensors attached to the abdominal wall. The actual capsule's position and its trajectory is graphically displayed on the workstation screen as a two-dimensional image. A comparison with fluoroscopy showed that this computer algorithm allows to estimate the capsule location in the abdomen within an average range of 3.77 cm. Visible differences in the mucosal pattern of the jejunum and ileum are also helpful in clinical practice.

Between March 2003 and June 2006, we performed capsule endoscopy in 58 patients with suspected small bowel disease (30 women, 28 men; mean age 53 years, range 12 – 84 years). The most frequent indication was obscure gastrointestinal bleeding (69%). In 12 patients (21%) the capsule did not reach the colon. The examination was normal in 19 patients (33%) and the following abnormalities were found in the remaining 39 patients (diagnostic yield of 67%): vascular lesion (n=8), active bleeding without visible lesion (n=6), inflammatory changes (n=6), diverticula (n=6), tumour (n=4), polyp (n=4), changes compatible with celiac disease (n=2), miscellaneous (n=3). Nineteen patients underwent subsequent surgery or endoscopic verification that confirmed capsule endoscopy diagnosis in all but one case. The capsule retention occurred in 2 patients (3,5%), one of them required surgical removal.

FUTURE INDICATIONS OF CAPSULE ENDOSCOPY. THE HUNGARIAN EXPERIENCE

István Rácz

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Future indications of CE

The PillCam® ESO, which was specifically designed to investigate esophageal diseases, was recently studied and released. The main indication for PillCam® ESO is for patients with GERD and Barrett's esophagus. Recently, a new device with an image production capability of 14 fps was developed. Other esophageal pathologies can presumably be detected by PillCam® ESO as well. Small pilot studies suggest it to be comparable to EGD in detecting esophageal varices and assessing portal hypertension in cirrhotic patients.

CE can be used to detect small bowel polyps related to hereditary polyposis syndromes. CE has been found to have a higher yield for detecting such polyps than barium studies. Growing evidence from studies confirms the usefulness of this technique for detecting polyps in patients with Familial Adenomatous Polyposis (FAP) and as first line procedure in patients with Peutz-Jeghers syndrome (PJS).

Considerable side effects and pathological lesions related to the gastrointestinal tract can be caused by NSAID. VCE was useful in some recent studies to detect lesions caused mainly by NSAID. The most common lesions were mucosal breaks, seen in 40%. CE showed that NSAID damage is more frequent and extensive than suggested by studies of NSAID-associated small-bowel injury shown by ileoscopy performed at the time of colonoscopy or in an autopsy study.

Colonic lesions, especially cecal cancers and angioidesplasias, have been described using a video capsule in the small bowel. The use of CE in the colon as a screening tool for cancer or other lesions certainly has attractive aspects. However, some issues need to be resolved before this can be a reality. Improvements in technology may help overcome these obstacles.

CE experiences in Hungary

The first capsule endoscopy study in Hungary was performed in 2002. Recently in five gastroenterological workplaces is CE available, all devices are Given Imaging products. Actually there is no insurance company reimbursement for CE. The total of 220 CE examinations were performed in Hungary with a 96% technical success rate.

According to the collected data the most frequent (63%) CE indication was overt or occult obscure GI bleeding. In 19% of the examination suspected small bowel Crohn's disease and in 8.5% hereditary polyposis syndrome surveillance was the clinical reason of CE examinations. Angiodysplasia was seen as the most frequent pathologic finding (27%) while in 15 cases (6.5%) small bowel tumors were detected. In 21.5% of the CE studies a negative result was reported. Outcome after all CE procedures could be only partly followed, however in two centers (Esztergom and Győr) the clinical outcome of obscure bleeders with positive CE findings (n=48) was precisely checked up. In this patient subgroup the positive CE result had an 72% modification rate in further patient care with 37% surgical activity. Capsule retention occurred in 3 cases while delayed excretion rate was 6.5%

Conclusions. Based upon the early experiences with CE in Hungary we suggest that a minimum 5-600 capsule endoscopies are needed annually mostly for the complete diagnostic workup of obscure GI bleeders.

PATIENT PREPARATION FOR SMALL BOWEL CAPSULE ENDOSCOPY. THE SLOVENIAN EXPERIENCE

Živa Mrevlje

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Capsule endoscopy is a novelty in gastroenterology that allows to visualize the entire small bowel mucosa. It is easy and fairly safe to use and noninvasive to the patient. The field of indications has been rapidly expanding since the start of widespread clinical implementation:

apart from detecting possible bleeding sites in the small bowel it is now widely used also in diagnosing Crohn's disease, celiac disease and other entities that affect the small bowel. To date, several clinical studies had been performed and all agreed that the diagnostic yield in capsule endoscopy is higher than in conventional diagnostic methods for detection of small bowel disease. One of the challenges in capsule endoscopy remains the bowel preparation before the procedure and the management of slow gastric passage of the capsule endoscope. The standard preparation which consists simply of an overnight 12h fasting suggested by the early experiences sometimes fails to lead to a total visualisation of the small bowel. The total visualization can be in part hindered by a slow gastric passage, in part by turbid fluid in the small bowel lumen, most usually in the distal part of the ileum.

The evidence in the literature is contradicting and unsubstantiated; most of the studies have been so far published as abstracts and have thus not been adequately peer reviewed. The methodology of the published studies is very varied and only a small fraction of those are randomised controlled trials which confer the highest grade of evidence. By reviewing the available printed sources between january 2004 and june 2006 one could extract 11 studies that each analized the data collected from more than 20 pts. Out of those eleven 4 were RCTs that analized the effect of bowel preparation and use of prokinetics in capsule endoscopy and none of these four had a comparable study protocol or dealt with the same question in the field of bowel preparation for capsule endoscopy. At last but not least, the measures of the effect of bowel preparation are too varied for reliable comparison or drawing to general conclusions. The latest consensus at the 5th International conference of casule endoscopy in Boca Raton, FL was therefore reached in part. It was agreed that it is possible for preps and prokinetics to improve the quality of small bowel cleanliness. It was also agreed that it is possible that preps and prokinetics improve gastric emptying time, small bowel transit time and completeness of examination and that keeping patients recumbent in the right lateral position may shorten gastric emptying time. The best type of preparation, dose and time of administration still remain to be determined.

WIRELESS CAPSULE ENDOSCOPY IN PATIENTS WITH OBSCURE GASTROINTESTINAL BLEEDING. EXPERIENCE FROM SERBIA

Miodrag N. Krstić, Jelena Martinov, Slobodan N. Krstić, Djordjije Šaranović, Željko Laušević, Tomica Milosavljević, Goran Janković, Predrag Peško
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Background: The aim of the presenting study was to clarify the usefulness of capsule endoscopy(CE) in patients with obscure (overt / occult) gastrointestinal (GI) bleeding in Serbia..

Methods and patients: Thirty patients (14 men, 16 women, mean age 50 years, range 9 -79 years) with non-diagnostic esophagogastroduodenoscopy, colonoscopy and barium follow-through of the small bowel were enrolled in the study. Fourteen patients had overt and sixteen occult bleeding. The single senior endoscopist interpreted CE findings in an unblinded manner.

Results: The first CE in Serbia has been done on 17.07.2003. From October 2004 all costs for CE are covered by insurance for those with obscure gastrointestinal bleeding. CE identified a source of bleeding in 14/30 patients(46,6 %). Lesions identified were: G.I.S.T and lymphoma in 5, angiodysplastic lesions and isolated small-bowel Crohn's disease in 2, Meckel's diverticulum in 2, fresh bleeding, segmental celiac disease and colonic diverticulosis in a one. CE was significantly more sensitive in detecting the source of bleeding in patients with ongoing overt bleeding comparing with those with occult bleeding (64,3% vs 31,3%). The positive suspicious findings were seen in 6/30 (20%) of patients (2/14 with overt bleeding and 4/16 with occult bleeding. In 3/14 (21,4%) with overt and 7/16 (43,7%) with occult bleeding findings on CE were negative. Patients with negative findings remained asymptomatic for one year of follow-up. Capsule retention because of unsuspected stenosis occurred in a single patient and required surgery, which resolved the problem.

Conclusion: CE is an effective diagnostic tool for patients with obscure GI bleeding. It can diagnose the bleeding site beyond the reach of conventional modalities. Complication rate is very low and technique is painless. The best candidates for the procedure are those with ongoing and overt bleeding.

CLINICAL CONSEQUENCES OF CAPSULE ENDOSCOPY AND REPORT FROM AUSTRIA

Rainer Schöfl

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Diagnostic instruments are not applied for their own sake. They should support search for diagnosis, provide indications for therapies, target them more precisely and ultimately improve outcome, which could mean less mortality or shorter hospital stay, reduced complications or improved quality of life. Whereas a new method is rapidly and easily defined concerning sensitivity and specificity, it is difficult to state if "clinical consequences" occurred.

What are "clinical consequences": is it only surgery, embolization or enteroscopy (push, double-balloon) as invasive sequels - or specific drug therapy like steroids - and unspecific drug therapy like fibrinolysis-inhibitors? Is it enough to abandon NSAIDs, stop anticoagulation or ASA to significantly change the clinical course? When a new method only indicates further diagnostic measurements or avoids others or simply reassures the patient – does that already justify the term "clinical consequence"?

According to a substantial number of now available studies diagnostic yield of capsule endoscopy in patients with obscure bleeding lies between 50% and 75% of patients examined. Recent studies - also trying to define if capsule Endoscopy has led to clinical consequences - set the probability from 22% to 41% but lack a sufficient number of patients (45 on average). The only larger series by Pennazio (100 patients) gives a surprising 87% of clinical sequels for a highly selected group with ongoing ouvert bleeding. A single study on consequences for Crohn-patients found a probability of 70%. Recently Gay et al. stated, that capsule endoscopy in various indications influenced management positively in 91%.

More precise answers could only be provided in the future by multicentric randomized studies comparing consequences of complete diagnostic work up with and without capsule endoscopy.

Worldwide 3.000 centres use approximately 160.000 capsules per year. Austria started in October 2001 and houses now 26 centres offering capsule endoscopy, calculating 317.000 inhabitants per installation. Up to now 3.000 capsules were swallowed in our country, recently (2005) 870 per year. Average experience per centre encloses 119 exams; the most experienced has done 410. Mean number of exams per year is 33. Five centres provide double balloon endoscopy, too.

An evaluation of the first 200 Austrian capsule endoscopies by Maier et al. found the indications distributed as follows: obscure bleeding 79%, Crohn's disease 13% and others 8%. 78% of capsules reached the cecum during transmission time. Diagnostic yield was 56% for bleeding and 28% for Crohn's disease; 1.5% of capsules were retained.

Austrian healthcare insurance companies reimburse only the indication "obscure bleeding".