The ins and outs of therapeutic endoscopy: From the 11th International Course on Therapeutic Endoscopy,

October 14 to 17, 1998

CN Williams MD FRCPC¹, NE Marcon MD FRCPC², ABR Thomson MD PhD FRCPC³

The preceding articles in this issue form the proceedings of the 11th International Course on Therapeutic Endoscopy. This article represents 'bullet prints' of fun facts from the course.

"Results of photodynamic therapy in Barrett's esophagus: A review" B Overholt (United States)

- Sodium porfimer (Photofrin, QLT Photo Therapeutics, Vancouver, British Columbia) photodynamic therapy (PDT) is the selective destruction of malignant tumours with nonthermal local necrosis.
 - Administer 2 mg/day intravenously, followed by 630 nm red light exposure 48 h later.
 - Use a cylindrical diffuser and centering balloon.
 - Maintain pH above 4 with an oral proton pump inhibitor (omeprazole 20 mg bid).
 - Patient should avoid sunlight for three to six weeks.
- PDT is probably the most preferred treatment for Barrett's epithelium with high grade dysplasia, either flat or polypoid (esophageal polyp).
- In 100 patients, 75% of Barrett's epithelium was replaced with squamous epithelium after PDT.
- Lugol's iodine solution (chromoendoscopy) is used to detect residual glandular tissue at the squamocolumnar junction.

"New photosensitizers for photodynamic therapy in gastroenterology" S Bown (United Kingdom)

- New agents are being developed, allowing a choice for specific therapy.
 - Aminolavulinic acid (ALA) given exogenously is converted into an active agent, protoporphyrin IX, suitable for mucosal lesions without risk of strictures such as occurs with Photofrin.
- Is PDT useful in the nonluminal gut? Yes. PDT is useful for pancreatic cancer and cholangiocarcinoma.
 - There have been promising early results in 10 patients presenting with obstructive jaundice due to localized adenocarcinoma of the head of the pancreas.
 - PDT can be used in unsuitable surgical candidates, under conscious sedation after placement of a metal stent.
 - Two of 10 patients lived for over a year!
- In the future, *Helicobacter pylori* may be treated with PDT! This is an interesting application but is still highly speculative.

¹Department of Medicine, Division of Gastroenterology, Dalhousie University, Halifax, Nova Scotia; ²Department of Medicine, Division of Gastroenterology, University of Toronto, Toronto, Ontario; ³Department of Medicine, Division of Gastroenterology, University of Alberta, Edmonton, Alberta

Correspondence: Dr Alan BR Thomson, Department of Medicine, Division of Gastroenterology, 519 Newton Research Building, University of Alberta, Edmonton, Alberta T6G 2C2. Telephone 403-492-6490, fax 403-492-7964, email alan.thomson@ualberta.ca

“Endoscopic mucosal resection using a cap: Techniques for use and preventing perforation”

H Inoue et al (Japan)

- Endoscopic mucosal resection (injection, suction, snaring) using a tube or a cap-fitted endoscope is used to draw early esophageal mucosal lesions into the tube or cap with suction, after initial injection of the base of the lesion with 20 cm³ saline to lift the mucosa.
- The tissue is snared and electrocautery is used, leaving the muscle layer bare, which heals over with squamous epithelium. This is similar to the technique for removal of colonic sessile polyps.

“East meets West: What is early cancer?”

R Riddell (Canada)

- Differences in definition are important. What is called ‘early cancer’ in the East is called ‘high grade dysplasia’ in the West.
- The definition of ‘adenoma’ may be different between East and West – as are the definitions of the terms ‘dysplasia’, ‘atypia’, ‘cancer in situ’ and even ‘carcinoma’.
- The process of developing pathological ‘harmony’ is in progress.

“Tissue staining (chromoscopy) of the gastrointestinal tract”

B Fennerty (United States)

- Tissue staining at endoscopy is used to increase the yield and accuracy of endoscopy and, therefore, the outcome for the patient.
- Vital, contrast, reactive stains and tattoos may be used.
 - Lugol’s: squamous epithelium to distinguish Barrett’s esophagus with 95% sensitivity and specificity (household vinegar may also be useful).
 - Methylene blue to stain absorptive epithelium (intestinal metaplasia).
 - Indigo carmine highlights the topography of colonic polyps.
- Indigo carmine highlights scalloping of the folds suggestive of sprue (very sensitive when using esophagoduodenoscopy plus magnifying endoscopy).

“Is light-induced fluorescence better than the endoscopist’s eye?”

N Marcon (Canada)

- With white light, one-sixth of gastric cancer patients had a previously normal endoscopy within three years.
- Dysplastic lesions fluoresce differently from normal tissue (autofluorescence). White light missed seven of nine early squamous cancers of the esophagus.
- Light-induced fluorescence is used to identify occult lesions, predict the histology of macroscopic lesions and examine scars.
- A dual spectrum (red to green ratio) intensified camera captures the autofluorescent image.

“Zapping Zenker’s diverticulum: Gastroscopic treatment”

C Mulder (Holland)

- The Zenker’s diverticulum-bridge is divided with a coagulation/argon beamer and a flexible endoscope to create an overflow from the diverticulum into the esophagus, using a precut needle.
- Traction diverticulae in the esophagus may also be treated endoscopically.

“Spots and clots – leave them or treat them?”

Why and how to treat”

D Jensen (United States)

- The prevalence of endoscopy signs are as follows: clean base 32%; nonbleeding visible vessel 22%; oozing 14%; active bleeding 12%; flat spot 10%; and clot 10%.
- The strategy for adherent clots is as follows:
 - Preinject the base with 4 quadrant adrenalin.
 - Use snare cold quillotine and combination therapy (injection and bipolar or heater probe).
 - Use bid oral proton pump inhibitor.
 - Biopsy for *H pylori*.
 - Full liquids.
 - Discharge in 48 h.
- Adherent clots from diverticular bleeding may be treated in the same way as bleeding from adherent clot from duodenal ulcer bleeding.
- Flat spots have a prevalence of 10% in gastrointestinal bleeders and there is a 7% chance of rebleed. Give proton pump inhibitors, biopsy for *H pylori* and discharge early (if admitted at all).
- For adherent clots on an ulcer that cannot be washed off, an amorphous red clot obscuring the underlying stigmata, larger than a visible vessel, has a rebleeding rate of 30% versus 50% for rebleeding from a visible vessel. Underlying vessel obscured by an adherent clot – inject, remove clot, inject and cauterize.

“Preventing ulcer rebleeding: The role of second-look endoscopy”

SCS Chung (Hong Kong)

- The rebleeding rate of adrenalin plus heater probe is 3%, while the rebleeding rate of thrombin is 4.5% and that of fibrin glue 10%. Take home message: combination therapy is superior to monotherapy.
- After successful initial hemostasis, second-look endoscopy the next day is useful to reduce the risk of rebleeding or reoperation, particularly in high risk patients (with active bleeding, visible vessel or clot, ie, high risk for rebleed and ulcers larger than 2 cm).

“Intrahepatic stones: The percutaneous approach”

H Neuhaus (Germany)

- When hepatolithiasis is restricted to the left hepatic lobe, hepatic resection and left lateral segmentectomy are the best therapeutic options because the source of recurrent

infection is removed. When stones are located in the right liver lobe, lobectomy is rarely performed because of the high complication rate.

- Percutaneous transhepatic interventions are safe and effective for removal of intrahepatic stones under antibiotic coverage, even in patients who are high risk candidates for surgery or who have had previous biliary tract operations.

**“Biliary sphincter balloon dilation:
Who, when and how?”**

K Huibregtse (Holland)

- Endoscopic balloon dilation (EBD) is useful for the removal of bile duct stones, thanks to the introduction of laparoscopic cholecystectomy, with a similar complication rate as that of endoscopic sphincterotomy (ES) (about 20%).
- EBD may be particularly suited to patients with an increased risk of bleeding.

**“Barrett’s esophagus: Is it all that bad?”
GNJ Tytgat (Holland)**

- Barrett’s esophagus is intestinal metaplasia in the esophagus of any length. Multipotential progenitor cells exposed to acid in vitro differentiate into columnar cells rather than squamous cells. This intestinal metaplasia is reflux-related from hydrochloric acid and from bile acids.
- There is a 10% increase per year in esophageal adenocarcinoma and a 4% increase per year in cardiac adenocarcinoma.
- Mutated p53 is associated with the development of dysphasia associated with Barrett’s esophagus.
- Endosonography can detect columnar metaplasia but not dysplasia. Endosonography is accurate in staging an infiltrative lesion, especially without involvement.
- Intestinal metaplasia is often missed (90%). Many people with reflux symptoms who have Barrett’s esophagus will be missed. The risk of cancer with short or long segment Barrett’s esophagus is about 10%. The risk of cardiac adenocarcinoma is unknown. One per cent of patients with long segment Barrett’s esophagus per year develop adenocarcinoma.
 - Take four-quadrant biopsies every 2 cm for long segment Barrett’s and every 1 cm for small segment Barrett’s. Better still, stain with Lugol’s iodine and biopsy highlighted areas. This increases the yield of dysplasia of random four-quadrant biopsies.
- Options for destroying Barrett’s esophagus include mucosal resection, PDT, neodymium: yttrium-aluminum-garnet, argon laser therapy, argon plasma coagulation and BICAP (Circon-ACMI, Stamford, Connecticut) coagulation.
- Achlorhydria to help heal Barrett’s esophagus is achieved with proton pump inhibitor bid plus nocturnal H₂ receptor antagonists to prevent night-time acid ‘breakthrough’.
- Barrett’s surveillance programs detect earlier lesions, and the patient dies later than those with chronic gastroesophageal reflux disease and not in a screening program.

**“Early Colon Cancer: The Role of Staining
and Magnification Endoscopy”
S Kudo (Japan)**

- Depressed early colon cancers (‘phantom’ cancers) are better seen with staining and magnification endoscopy.

**“Colorectal cancer screening: A guide to the guidelines”
D Rex (United States)**

- Screening for colorectal cancer (CRC) is recommended (standard of medical care) for average risk persons; the only controversy is what is the best method (fecal occult blood, flexible sigmoidoscopy, barium enema, colonoscopy [preferred method]). The choice depends on the patient, the physician and the payer.
- Computed tomographic (CT) colography (virtual endoscopy) and markers of CRC are coming. CT colography has a sensitivity of 75% and a specificity of 90% for polyps larger than 1 cm.
- The lifetime CRC risk based on family history or adenomas is increased; these persons are urged to be screened by total colon evaluation.
- If a truncation assay blood test for familial adenomatous polyposis proband is positive, screen, and, if negative, screen according to average-risk guidelines.
- The Amsterdam criteria for hereditary nonpolyposis colon cancer (HNPCC) are as follows:
 - At least three family members in two or more successive generations with CRC, one of whom is a first-degree relative of the other two.
 - Cancer diagnosed before the age of 50 years in at least one family member.
 - Familial adenomatous polyposis has been ruled out (three or more CRC, two generations, one young).
- Check for microsatellite instability in tumours of HNPCC-like patients.
- Six per cent of Ashkenazi Jews have a mutation in the adenomatous polyposis coli gene (28% with a family history of CRC). Genetic screening is important, but it is not known whether screening indications should be different from those for the non-Ashkenazi population.

**“Colonoscopy ‘my way’: Preparation, anticoagulants,
antibiotics and sedation”
J Wayne (United States)**

- Patients should be told not to take sugar 2 h before or after the electrolyte bowel preparations in order to avoid unwanted absorption of sodium.
- Discontinue warfarin three to five days before colonoscopy; if the risk of thromboembolism is high, admit the patient for heparin therapy before colonoscopy.
- Stop once daily acetylsalicylic acid one week before colonoscopy. If the patient forgets, do the colonoscopy anyway.
- According to the New American Heart Association Guidelines (1), high risk procedures (esophageal dilation, injecting varices, endoscopic retrograde

cholangiopancreatography [ERCP] for obstructive jaundice) indicate antibiotic prophylaxis using ampicillin and gentamycin (clindamycin for penicillin allergy).

“Colon quiz”

G Tytgat (Holland)

- Cytomegalovirus may mimic arteriovenous malformation.
- In an autoamputated polyp in an adult, suspect CRC.
- Pressure necrosis ulcers may occur in Hirschsprung's disease.
- Suspect tuberculosis when there is a solitary ulcer in the cecum.
- Suspect spread of prostate cancer when tiny sessile hyperplastic-appearing polyps are in the rectum.

“Endoscopic ultrasound: The physics and function of current technology”

R Hawes (United States)

- The newer endoscopic ultrasound (EUS) endoscopes may be cost effective in patients with dysphagia, including imaging the celiac axis.
- In the newer instruments, the imaging plane is in line with the biopsy channel and needle.
- For indications for EUS imaging (cancer, submucosal masses, chronic pancreatitis), radial scanning EUS instruments are best; or intervention (fine needle aspiration, fistula, drainage, anticancer therapies) – curvilinear EUS instrument best for this indication (requires a special processor).
- The catheter probe is best for early mucosal malignant lesions.
- A new era for EUS for doing work outside the gut wall is coming.

“Biliary pancreatitis: When to scope and when to cut”

J Frakes

- Pancreatitis is assessed through early prognostic signs (Ranson, Acute Physiology and Chronic Health Evaluation II), organ failure (shock, gastrointestinal bleed, disseminated intravascular coagulation, pulmonary insufficiency, renal failure) and complications (abscess, pseudocyst).
- Three of four randomized controlled trials favour early ERCP and ES for acute biliary pancreatitis (ABP), resulting in improved median hospital stay, morbidity and mortality versus conservative treatment, especially for severe pancreatitis.
- ERCP/ES may also be useful for milder disease, with the procedure performed within 24 h of admission for ABP.
- Most cases of ‘idiopathic’ pancreatitis are due to microlithiasis, and ERCP/ES may be useful.

- Acute cholecystitis in pregnancy from cholelithiasis often recurs (70%) and may be helped by ERCP/ES.
- Use ERCP/ES for prelaparoscopic cholecystectomy, depending on the experience level of the surgeon and the physician performing the ERCP.

“Endoscopic pancreatic stenting in pancreatic cancer”

G Costamagna (Italy)

- Infiltration of pancreatic neural and celiac plexus, pancreatic and common bile duct destruction (pain worsened by food, stricture with proximal dilation) and pancreatic inflammation contribute to the pain of pancreatic malignancy; about 15% are candidates for endoscopic pancreatic stenting (EPS).
- The technique for EPS for pain from pancreatic cancer is as follows: biliary and/or pancreatic sphincterotomy with or without stenting, stricture dilation, nasopancreatic drainage, with about 60% of patients having total relief of pain, and 20% having partial relief. EPS may also improve survival.

“Pancreatic stones: Treat or ignore?”

DA Howell (United States)

- ERCP management of pancreatic duct stones (PDS) requires careful case selection: no alcohol or narcotic dependence, intermittent rather than chronic pain, and good family/social support, three or fewer stones in the pancreatic head and absence of downstream extensive stricturing.
- PDS is cleared totally in 73% and partially in 14%, without complication or exacerbation of pancreatitis. Pain is resolved totally in 60% and partially in 30%, and pain recurs in only 11% of patients.

“Precut: who, when and why?”

GB Haber (Canada)

- Precut for difficult biliary cannulation is a procedure associated with high risk of failure and pancreatitis. The endoscopic appearance of the papilla is an indicator of possible difficulty – a bulbous papilla being easier than a flat papilla.
- Precut is an independent factor in complications. The risks are highest in patients with presumed sphincter of Oddi dysfunction.
- A significant reduction in the complication of pancreatitis can be achieved with a prophylactic placement of a pancreatic stent prepapillotomy.
- This technique is best carried out in tertiary centres.

REFERENCES

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