Colorectal cancer screening in Inflammatory Bowel Disease: How to get started

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University of Wisconsin.
Objectives

- Identify high risk patients by understanding the risk factors for developing colorectal neoplasia in IBD
- Contrast random vs. targeted biopsies
- Discuss evidence for chromoendoscopy in IBD
- Review how to incorporate chromoendoscopy in your clinical practice.
New Guidelines

SCENIC International Consensus Statement on Surveillance and Management of Dysplasia in Inflammatory Bowel Disease

Loren Laine, Tonya Kaltenbach, Alan Barkun, Kenneth R. McQuaid, Venkataraman Subramanian, and Roy Soetikno, for the SCENIC Guideline Development Panel
A Case of low grade dysplasia

- 56yo with 20 year hx of Crohn’s Colitis is referred for 2nd opinion due to cecal biopsies with low grade dysplasia.
- Next step?
  - A) Refer for colorectal surgery
  - B) Repeat Colonoscopy with random Biopsies using new HD scope with NBI
  - C) second opinion from pathology
  - D) Repeat Colonoscopy with Chromoendoscopy
Cecum with Chromo
Can you see the cancer?
Can you see the cancer?
Can you see the cancer?
Can you see the cancer?
Rectal cancer in IBD patient with longstanding UC.
Pitfalls/Challenges to Chromoendoscopy in IBD

- Perception of time consuming and expensive
- Unclear if it changes outcomes (cancer or mortality)
- Many patients don’t “qualify” for it due to poor prep or too much inflammation
- Poor Bowel preparation
- Too BLUE
- Not using concentrated dyes
- No defined training pathway
Chromoendoscopy: Which Dye?

- Indigo carmine (0.1-0.4%)
  - Contrast stain neither reacts or is absorbed by the colonic mucosa
  - Pools in mucosal grooves allowing better definition of small or flat lesions as well as alterations in mucosal architecture
  - Can be washed off the mucosa

- Methylene blue
  - Taken up by colonic mucosa within 1-2 minutes staining noninflamed mucosa but is poorly taken up by dysplastic tissue or inflamed mucosa

- No published studies comparing indigo carmine to methylene blue in patients with IBD
Landmark study

- 2003 Kiesslich et al RCT of 165 UC patients 1:1
  Chromoendoscopy CE vs White light. (WL)
  - CE detect more dysplasia 38% vs. 12%  p =0.003
  - More flat 28.6% vs. 4.9% p= 0.0007
Chromoendoscopy Finds More Dysplasia than Conventional Exams

<table>
<thead>
<tr>
<th>Author</th>
<th>Institution</th>
<th># of UC Patients</th>
<th>Type of Imaging</th>
<th>Number of Dysplastic Lesions</th>
<th>Difference (x-fold)</th>
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</thead>
<tbody>
<tr>
<td>Kiesslich</td>
<td>University of Mainz, Germany</td>
<td>165</td>
<td>MB</td>
<td>32</td>
<td>10</td>
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<tr>
<td>Rutter</td>
<td>St. Mark’s Hospital, Harrow, UK</td>
<td>100</td>
<td>IC</td>
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<td>Hurlstone</td>
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<td>Kiesslich</td>
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<td>Marion</td>
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</table>
Recent Meta-Analysis
Chromoendoscopy with targeted biopsy leads to increased efficacy

- 6 Articles contained all data on dysplasia, targeted, flat polyps
- Leads to 7% (95% CI 3.3 to 10.3%) more dysplasia
- NNT to find another patient with at least one dysplasia 14.3
- Increased the likelihood of detecting any dysplasia 9 x when compare WL
  - Detecting non-polypoid dysplasia 5x higher

58 yold with longstanding UC
58 yold with longstand UC
Chromoendoscopy is it too long?

- Meta-analysis increased procedure time by 11 minutes overall. At experience centers.
- Rutter; study tandem overall withdrawal time of 21 minutes.
Narrowing band Imaging is not Superior to Conventional Colonoscopy for Dysplasia Detection in UC

<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>N</th>
<th>Total number of dysplasia</th>
<th>NBI</th>
<th>WLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dekker et al. (2007)</td>
<td>Tandem</td>
<td>42</td>
<td>11</td>
<td>8/11 (73(^1))</td>
<td>7/11 (64(^1))</td>
</tr>
<tr>
<td>Van den Broek et al. (2011)</td>
<td>Tandem</td>
<td>48</td>
<td>11</td>
<td>8/11 (73(^1))</td>
<td>9/11 (82(^1))</td>
</tr>
<tr>
<td>Ignjatovic Et al. (2012)</td>
<td>Parallel group</td>
<td>112</td>
<td>5/56 (9(^2))</td>
<td>5/56 (9(^2))</td>
<td></td>
</tr>
</tbody>
</table>

1 Proportion of total dysplastic lesion detected overall
2 Proportion of patient with at least one dysplastic lesion.
High Definition matters.
One prospective study: Tandem surveillance in 75 patients using indigo carmine, 2009-2013.

<table>
<thead>
<tr>
<th></th>
<th>Patients with Dysplasia</th>
<th>Dysplastic Lesions</th>
<th>Non-polypoid Dysplastic Lesions</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD Chromo</td>
<td>21.3% (16/75)</td>
<td>100% (22/22)</td>
<td>9.3 (7/75)</td>
</tr>
<tr>
<td>HD WL</td>
<td>9.3% (7/75)</td>
<td>45.5 (10/22)</td>
<td>1.3% (1/75)</td>
</tr>
</tbody>
</table>
HD chromo vs. HD white Light

- DDW abstract. One prospective study: Tandem surveillance in 53 HDWLE and 50 HDCE patients using indigo carmine.
- HDCE better p 0.04 than HDWLE

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<td>HD Chromo</td>
<td>11</td>
<td>14/53</td>
</tr>
<tr>
<td>HD WL</td>
<td>5</td>
<td>6/50</td>
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</table>

Picco IBD 2013
61 yold Crohn’s Colitis
61 yold Crohn’s Colitis
Pit Patterns with Chromoendoscopy

Non-neoplastic pattern

Neoplastic pattern

Kudo S et al. Endoscopy 1993
SURFACE recommendations for chromoendoscopy

- **S**trict patient selection
  - Avoid active disease
  - Risk for CRC

- **U**nmask the mucosal surface
  - Excellent bowel prep; remove mucus and debris

- **R**educe peristaltic waves
  - Glucagon 1mg in cecum

- **F**ull-staining length of the colon

- **A**ugmented detection with dyes
  - 0.4% indigo carmine; 0.1% methylene blue

- **C**rypt architecture analysis
  - Pit pattern III/IV of concern

- **E**ndoscopic targeted biopsies
  - Biopsy all mucosal alterations, especially pit pattern III/IV
You need an Adequate preparation Yellow and blue = Green
Inflamed Colon, Chromo not adequate
Inflammatory Polyps limit chromoendoscopy
Stricturing disease, chromoendoscopy not adequate
Signs of Non-polypoid colorectal Neoplasms in IBD

A. Slightly elevated lesion
B. Focal Friability
C. Obscure vascular pattern
D. Discoloration (uneven redness)
E. Villous mucosa
F. Irregular nodularity
How I can perform chromoendoscopy?

- Follow surface recommendations
- Once reach cecum put methylene blue or indigo in water bottle
- Consider glucagon
- Spraying in segmental fashion every 20-30cm
- Excess dye is suctioned, reinsert colonscope to proximal segment
- Indigo settle in seconds, methylene blue 60 seconds to be absorbed
How do I perform Chromoendoscopy?

2 Vials of methylene blue in 500m ml of water

<table>
<thead>
<tr>
<th>Purpose of IEE</th>
<th>Mixture</th>
<th>Depth of blue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detection</td>
<td>2 Ampules with 250 mL of water</td>
<td></td>
</tr>
<tr>
<td>Detailed Viewing</td>
<td>1 Ampule with 25 mL of water</td>
<td></td>
</tr>
<tr>
<td>Submucosal Injection</td>
<td>10 Drops with 100 mL of saline</td>
<td></td>
</tr>
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You can learn chromoendoscopy?

- Mayo clinic study
- 6 endoscopist no experience of dysplasia surveillance in UC
- Reviewed atlas of neoplastic and non-neoplastic with WLE and CE along with video samples
- Measured withdrawal time from cecum and accuracy of image interpretation (did not include polypectomy)
It’s going to be longer, initially.

- Learning curve
- 31 minutes for fewer than 5 procedures completed.
- 19 minutes for more than 15 procedures completed

Excellent inter-observer agreement among non-expert endoscopic in detection and interpretation of lesions detected by CE

FIGURE 1. Withdrawal times from cecum based on procedure number and site of procedure.
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Featured Activities

Chromoendoscopy with Targeted Biopsy to Detect Nonpolyloid Colorectal Neoplasms (DV065) CME

Member Price: $0
Non-Member Price: $0
Access: Unlimited
CME Credits: 0.50
Type: New Titles
Running Time: 0.50 h

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DAVE Project
GIE Journal
Archives

https://vimeo.com/81376967
How I can start?

- Atlas of chromoendoscopy
  - Detection of Nonpolypoid (Flat and Depressed) Colorectal Neoplasms in Patients With Inflammatory Bowel Disease
  - Gastrointestinal Endoscopy Clinics Volume 24, Issue 3
    - An Atlas of the Nonpolypoid Colorectal Neoplasms in Inflammatory Bowel Disease
- Review previous pictures along with pathology
How I can start?

- Learning curve
  - Consider transition period of CE with targeted and random biopsy
  - One study showed endoscopist were partnered for first 5 cases procedure time plateaued at 15 cases

- Time allotment
  - Consider initially during learning curve period double colonoscopy time slot.