"Obscure" GI Bleeding

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Outline of Talk

- Definition of Small Bowel Bleeding Vs. OGIB
- Causes of Small Bowel Bleeding
- Options for Diagnosis and Management
  - Repeat Upper and Lower Endoscopy
  - Push Enteroscopy
  - Video Capsule Endoscopy
  - Deep Enteroscopy
  - CT or MR Enterography
  - Nuclear Scans/Angiography
  - Surgery/Intra-Operative Enteroscopy

Gastrointestinal Bleeding

- Upper Tract: 85%
  - Esophagus
  - Stomach
  - Duodenum
- Middle Tract: 5%
  - Small Intestine
- Lower Tract: 10%
  - Colon
Obscure Gastrointestinal Hemorrhage: Traditional Definition

Absence of identified source of bleeding after normal upper endoscopy, colonoscopy, & small bowel radiographic evaluation

Obscure/overt: Frank bleeding with or without iron deficiency
Obscure/occult: Guaiac positive stool with iron deficiency

Raju, Gerson, Gastroenterology 2007

Time to Redefine “Obscure” GI Bleeding

Lesions in the upper or lower GI tracts on repeat endoscopy found in 30-40% of patients.¹

Yield of VCE and Deep Enteroscopy in Suspected Small Bowel Disorders close to 60%²

Approximately 40-50% of patients with negative VCE found to have lesions on CTE.³

OGIB reserved for patients with bleeding despite VCE, Deep Enteroscopy, and CTE/MRE Examinations

1. Fry, APT 2009
2. Pasha, CGH 2008
3. Agrawal, J Gastro & Hepatology 2012
• GRADE system (www.gradepro.org)
  — Level of evidence
    • “High” (implying that further research was unlikely to change the
      authors’ confidence in the estimate of the effect)
    • “Moderate” (further research would be likely to have an impact on
      the confidence in the estimate of effect)
    • “Low” (further research would be expected to have an important
      impact on the confidence in the estimate of the effect and would be
      likely to change the estimate).
  — Strength of a recommendation
    • “Strong” when the desirable effects of an intervention clearly
      outweigh the undesirable effects
    • “Conditional” when there is uncertainty about the trade-offs
Causes of Small Bowel Bleeding

Common Causes

Under Age 40
- IBD
- Angiodysplasia
- Dieulafoy
- Neoplasia
- Meckel’s Diverticulum ulcers
- Polyposis syndromes

Over Age 40
- Dieulafoy
- Neoplasia
- NSAID

Rare Causes
- Small bowel varices/portal hypertension
- Amyloidosis
- Blue Rubber Bleb nevus syndrome
- Pseudoxanthoma elasticum
- Osler Weber Rendu syndrome
- Kaposi’s sarcoma with AIDS
- Plummer Vinson syndrome
- Tylosis
- Ehlers-Danlos syndrome
- Inherited polyposis syndromes
- Malignant atrophic papulosis

* Celiac Disease leads to iron-deficiency via malabsorption

Gerson, Fidler, Cave, Leighton - ACG Guideline 2015

Small Bowel Findings: Meta-Analysis

<table>
<thead>
<tr>
<th>Type of Lesion</th>
<th>Capsule Endoscopy</th>
<th>Deep Enteroscopy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Findings</td>
<td>61%*</td>
<td>45%</td>
</tr>
<tr>
<td>Vascular</td>
<td>24%</td>
<td>24%</td>
</tr>
<tr>
<td>Inflammatory</td>
<td>18%</td>
<td>16%</td>
</tr>
<tr>
<td>Neoplastic</td>
<td>11%</td>
<td>11%</td>
</tr>
</tbody>
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*P<0.05; Pasha, CGH 2008
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Argument for “Second Look” Exams in Patients with Obscure GI Bleeding

<table>
<thead>
<tr>
<th>Author, Year</th>
<th>Modality</th>
<th>No. Pts/DY</th>
<th>Yield EGD/Colo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zaman, 1998</td>
<td>PE</td>
<td>95 (41%)</td>
<td>EGD-25 (64%)</td>
</tr>
<tr>
<td>Descamps, 1999</td>
<td>PE</td>
<td>233 (53%)</td>
<td>EGD-25 (10%)</td>
</tr>
<tr>
<td>Lara, 2005</td>
<td>PE</td>
<td>32 (47%)</td>
<td>EGD – 13 (40%)</td>
</tr>
<tr>
<td>Fry, 2009</td>
<td>DBE</td>
<td>107 (65%)</td>
<td>EGD- 13 (12%) Colon – 12 (11%)</td>
</tr>
<tr>
<td>Van Turenhout, 2010</td>
<td>VCE</td>
<td>592 (49%)</td>
<td>EGD - 32 (17%) Colon – 8 (4%)</td>
</tr>
<tr>
<td>Lorenceau-Savale, 2010</td>
<td>VCE</td>
<td>35 (0%)</td>
<td>EGD or colon 8/13 (62%)</td>
</tr>
<tr>
<td>Robinson, 2011</td>
<td>VCE</td>
<td>707 (40%)</td>
<td>EGD – 22 (3%) Colon – 6 (1%)</td>
</tr>
</tbody>
</table>

Consider Second Look Exams if recurrent bleeding or prior incomplete examination
Barium studies should NOT be performed in the evaluation of small bowel bleeding!

(Strong recommendation, high level of evidence)
Push Enteroscopy

- Pediatric colonoscope or dedicated push enteroscope
- Examines upper tract to jejunum (70 cm distal to Treitz)
- Overall diagnostic yield is 53% (3-70%), mainly AVMs
- Allows for diagnosis and therapy
- Overtube does not increase diagnostic yield
- Most lesions are within reach of conventional endoscope
- Higher yield compared to VCE for lesions in duodenum and proximal jejunum
- Limitations: Looping and Discomfort
- Push enteroscopy can be performed as second-look examination (Conditional recommendation, moderate level of evidence)

Video Capsule Endoscopy (VCE)

- Painless and total SB visualization
- Better diagnostic yield (45-77%) than SB series/PE
- Complete to cecum in 79-90%
- High positive (94-97%) and NPV (83-100%) in OGIB
- Diagnostic Yield improved with bowel preparation
- Endoscopic placement for inpatients and gastroparesis
- Poor visualization of proximal SB
- VCE should be considered a first line procedure for SB evaluation after exclusion of upper and lower GI sources (Strong recommendation, high level evidence)

Zaman, GIE 1998
Pennazio, Gastroenterology 2004
Delvaux, Endoscopy 2004
VCE Diagnostic Yield and Repeat VCE

- Factors Associated with Increased Diagnostic Yield:
  - Overt Bleeding
  - Performance within 2 weeks of bleeding episode
  - Hemoglobin value < 10 gm/l
  - Repeat Bleeding episodes
  - Male Gender, Age > 60
  - Cardiac (Heyde’s Syndrome) and Renal Disease

- Yield for Repeat VCE
  - 50-75%
  - Wait for recurrent overt bleeding

References:
Bresci, J Gastroenterol 2005
Carey, Am J Gastro 2007
Svarta, Can J Gastroenterology 2010
Viazis, GIE 2009

Balloon-Assisted Enteroscopy

Double Balloon

Single Balloon
Double Balloon Enteroscopy

Single Balloon Enteroscopy
Spiral Enteroscopy

- Insert enteroscopes through spiral overtube
- Spiral O.D.16mm, no latex
- Overtube is advanced into jejunum, then rotated
- Small intestine is gathered by spiral rotation

Any method of deep enteroscopy can be used due to similar diagnostic yields
(Strong recommendation, moderate level of evidence)

Deep Enteroscopy - Indications

- Therapy of Vascular Lesions
- Suspected Crohn’s Disease
- Stricture or mass
- Refractory celiac disease
- Protein losing-enteropathy
- Retained foreign body
- Polyposis syndromes
- Carcinoid search
- Incomplete colonoscopy
- Inspect bypassed stomach or intestine (gastric bypass)
- ERCP via Roux-Y-limb
Deep Enteroscopy

• Duration of procedure
  – Continue until no progress or reach target
  – 1 to 1.5 hours in most reports

• Sedation – various approaches
  – Large amounts of conscious sedation
  – MAC preferred for longer duration

• Interventions
  – Can use most colonoscopy tools and devices through 2.8mm channel
  – Biopsy, snares, APC, Bicap, hemostatic clips, retrieval net, injection needles, TTS balloons

Clinical Impact from Enteroscopy

• DBE established new diagnosis:
  – 34% to 80%

• DBE leads to therapeutic intervention:
  – 42% to 76%

• Total enteroscopy possible:
  – 40 to 80% with experience

• Impact on outcome can be uncertain:
  – GIAD often demonstrate recurrent bleeding
  – Risk factors include cardiac and renal disease

Diagnosis of Small Bowel Bleeding

- Total enteroscopy should be attempted if there is a strong suspicion of a small bowel lesion based on clinical presentation (Strong recommendation, moderate level evidence)

- Intraoperative enteroscopy should be limited to scenarios where enteroscopy cannot be performed i.e. prior surgeries and intestinal adhesions (Strong recommendation, moderate level evidence)

- Except in patients with massive bleeding, VCE should be performed prior to deep enteroscopy to increase diagnostic yield (Strong recommendation, high level evidence)

Higher Diagnostic Yield with CTE after negative VCE
Imaging Recommendations

- CTE should be performed after negative VCE when small bowel bleeding suspected (Strong recommendation, low level evidence)

- CTE preferred over MRE unless younger patient (Conditional recommendation, very low level evidence)

- Consider CTE prior to VCE in the setting of abdominal pain, IBD, prior radiation therapy, previously small bowel surgery and/or suspected small bowel stricture or obstruction (Strong recommendation, very low level evidence)

- Perform CTE after standard CT if high clinical suspicion of SB source (Conditional recommendation, very low level evidence)

Tagged Scans, CTA, and Angiography

- Tagged Scintigraphy if Slower Rates Bleeding (0.1-0.2 ml/min)

- Perform angiography if massive overt bleeding and hemodynamic instability

- CTA preferred in stable patients to increase diagnostic yield and guide timing of angiography

- In patients with active overt bleeding, CTA is preferred over CTE (Conditional recommendation, very low level of evidence)

- Consider provocative angiography if ongoing bleeding and negative VCE, DBE, CTE
Treatment and Outcomes

- A source of bleeding found on VCE/deep enteroscopy should be treated in the setting of ongoing anemia or active bleeding (Strong recommendation, high level evidence)

- If no source of bleeding is found or an AVM with bleeding cessation, conservative therapy with iron can be appropriate (Strong recommendation, moderate level evidence)

- If bleeding persists after negative evaluation, ongoing evaluation should occur (Strong recommendation, low level evidence)

- Anticoagulation and/or antiplatelet therapy should be discontinued if possible (Strong recommendation, very low level evidence)

Gerson, Cave, Fidler, Leighton - AJG Guideline 2015
Brisk/Massive Suspected Small Bowel Bleeding

Stabilize patient

Nuclear Scan or CT Angiography

Positive

Angiography

Positive

Embolization

Negative

Specific management: Enteroscopy vs IOE

Sub-Acute Ongoing OGIB

Stabilize Patient

Proceed Directly to Deep Enteroscopy

Positive

Treat accordingly

Negative

Consider VCE vs CTE/MRE

Positive

Treat accordingly

Negative

Proceed with Nuclear Scan and/or Angiography or IOE
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Intermittent Occult or Overt Small Bowel Bleeding

Treat Accordingly

Positive

Second Look Endoscopy

Negative

Proceed with Small Bowel Evaluation

CTE/MRE and/or Patency Capsule

Obstructive symptoms and/or History of Crohn’s Disease

No Obstructive Symptoms

Negative

Positive

Specific Management: Deep Enteroscopy vs Surgery/IOE

VCE

Observation

Medical Therapy

Negative

Positive

No Obstructive Symptoms

Case Presentation
Case Presentation

- 67-year-old woman with transfusion dependent anemia and a history of GI bleeding
- PMHX: CREST, CAD, Factor V Leiden thrombophilia with multiple DVTs on warfarin, peripheral vascular disease, COPD, and CHF

Case Presentation

59-year-old male recurrent overt bleeding, on warfarin, no improvement on steroids
Case Presentation

- 71-year-old female with recurrent iron-deficiency anemia
- Yearly hospitalizations with transfusions
- Normal EGD, colonoscopy
- VCE with possible distal small bowel ulceration
- PMHX: Breast cancer, ASA usage
- Repeat VCE normal
Take Home Points: Small Bowel Bleeding

- Small bowel bleeding is uncommon (5%) but accounts for significant hospital costs, patient morbidity, and impact on quality of life
- Consider small bowel source after normal upper and lower endoscopic examinations
- Redefine obscure bleeding bleeding despite as negative endoscopy, VCE and CTE examinations
- 20-30% of patients with suspected small bowel bleeding will have a source within reach of a standard endoscope
- Second look exams if high suspicion or prior incomplete examination

Take Home Points: Capsule Endoscopy

- Capsule endoscopy is recommended as the third diagnostic test after EGD/colonoscopy
  - Directs subsequent enteroscopy examination
  - Similar yield to enteroscopy without risk of complications (except for retention)
  - Repeat capsule examinations shown to have high yield 50-75%
  - Capsule examinations within 2 weeks of bleeding episodes associated with higher diagnostic yields
Take Home Points: Deep Enteroscopy

- Empiric deep enteroscopy could be considered in the following scenarios:
  - Patients with known angiodysplastic lesions in the upper or lower GI tract
  - Patient with suspected upper small bowel lesion (such as suspected neoplasm on imaging test)
  - Patients with ongoing suspected SB bleeding

- Treatment for small bowel vascular lesions
  - Endoscopic therapy
  - Medical therapy: iron alone, octreotide, thalidomide
  - Correct underlying cause ie aortic valve replacement or heart transplant for LVAD patients

Take Home Points: Radiographic Examinations

- Barium studies are not useful in evaluation of small bowel bleeding

- Perform CTE or MRE if abdominal pain, suspected stricture, IBD, prior radiation, or high suspicion for neoplasm

- CTE should be performed after negative VCE due to higher sensitivity compared to CT for small bowel masses and vascular lesions

- Consider angiography in hemodynamically unstable patients with ongoing bleeding

- In stable patients consider multiphasic CT (CTA) to identify bleeding site and guide subsequent management
Thank You For Your Attention!