

OBSCURE LOWER GI BLEEDING

Differential Diagnosis

- Diverticulosis 17% – 40%
- Arteriovenous malformation 2% – 30%
- Colitis 9% – 21%
- Neoplasia 7% – 33%
- Benign anorectal disease 4% – 10%
- Upper GI source 0% – 11%
- Small bowel source 2% – 9%

Small Bowel Bleeding pattern:	
<u>Brisk (melana, hematochezia)</u>	<u>Occult Bleeding</u>
←	→
←	→
Angiodysplasia	Crohn's disease
Leimyosarcoma	Adenocarcinoma
Jejunal diverticula	Lymphoma
Aortoenteric fistula	ZE syndrome
Meckel's diverticulum	Vasculitis
Hemangioma	Medication
Carcinoid	
Infectious	

Small Bowel Bleeding: Etiology:

- **Vascular lesions:** most common cause of SB bleed = 70-80%. All appear similarly on endoscopy:
 - Angiodysplasia
 - Ecstatic blood vessels seen in the mucosa and submucosa of GI tract, more frequently seen with advanced age.
 - Most commonly found in cecum
 - 89% of lesions located in right colon, mean of 1.5 AVMs per patient¹
 - Incidence of colonic AVM over 50 yrs range from 2%-30%.
 - 3 defining characteristics on angiography: Slow filling vein, Vascular tuft, Early filling vein
 - 64% of patients (of 102) presenting sign was melena². 44% of patients with medically treated angiodysplasia will spontaneously stop bleeding during 13 month f/u.
 - <10% of colonic angiodysplasia eventually bleed.
 - 26% rebleeding rate in 1 year, 46% rebleed in 3 years.³
 - Venous ectasia
 - Telangiectasia – diffuse
 - Hemangiomas – neoplastic tumors made up of proliferating blood vessels.
- **Small Bowel Tumors:**
- **Ulcerations of Small Bowel**

- **Small Bowel Diverticula**
- **Small Bowel Vascular Anomalies.** Small bowel varices, Aortoenteric fistula – massive bleed, life-threatening.

Approach to Lower GI Bleeding

- **Initial Management**
 - Initial hemodynamic stabilization
 - IVF, foley
 - PRBC, platelets, FFP
- **Localizing Bleeding Source**
 - Colonoscopy
 - Radiolabeled red blood cell scanning
 - Selective mesenteric arteriography
 - Provocative Angiography
- **Colonoscopy**
 - Overall diagnostic yield from 53%-97%
 - Average complication rate of 0.5%
 - Colonoscopy has higher diagnostic yield and lower complication rate than arteriography – procedure of choice.
 - Arteriography should be reserved for patients with massive, ongoing bleeding in whom endoscopy is not feasible or colonoscopy failed to reveal source.
 - Colonic purge is controversial. Can improve diagnostic yield and safety.
 - If colonic source found: Segmental resection is the procedure of choice.
 - Rebleeding rate 0%-14%, mortalities ranging from 0%-13%
 - Blind segmental colectomy should never be performed: rebleeding rates as high as 75% and mortalities as high as 50%.
- **Radiolabeled Scan**
 - Detect bleeding as slow as 0.1-0.4 mL/min. (technetium-99m labeled sulfur colloid or RBCs). Requires 2 hours.
 - Controversial on diagnostic value:
 - 1996 study showed 97% accuracy for localization bleeding in 37 patients undergoing surgical resection.
 - 1990 study 42% rate of incorrect resection when surgical therapy was based solely on this modality.
 - Recommend: best used in patients with non-life threatening lower GI bleeding as a prelude and a guide to mesenteric angiography after active hemorrhage has been confirmed.
 - Patients with negative scan will most likely have negative angiography
- **Selective Mesenteric Arteriography**
 - Less sensitive than radionuclide scanning: bleeding must be at least 1.0-1.5ml/min
 - Overall diagnostic yield is 50-72% with massive hemorrhage, 25-50% with slowed bleeding.
 - Complication = 2 - 4%
 - Benefit: Offers therapeutic options: vasopressin infusion and embolization of bleeding vessel.

- Angiography's diagnostic value: in one study of 65 patients. 35% had positive angiogram, 61% of them required surgery. 65% had negative angiogram, 19% required surgery. Only 12% of patients underwent segmental colon resection that was based on angiography findings and did not bleed after their operation.⁴
- **Provocative Angiography**
 - Short-acting anticoagulant agents (unfractionated heparin, vasodilator, thrombolytics) in association with angiography. Followed by methylene blue injection.
 - From 1994-1999, 7 cases of provocative angiography. Only 2 induced angiographically identifiable bleeding → underwent surgical therapy. No complications. Conclusion: further studies needed

Small Bowel Bleeding:

- Should be considered if (-) colonoscopy and upper endoscopy
- Work up depended on character of bleeding:
 - In young patients, consider a small bowel series, or preferably, enteroclysis. Then, exploratory laparotomy for diagnosis and treatment of small bowel tumors
 - If massive bleeding: bleeding scan and angiography. Followed by surgery with intraoperative endoscopy or scintigraphy.
 - If slower bleeding:
 - Previously, small bowel series or enteroclysis → Push enteroscopy → Exploratory laparotomy with Intraoperative endoscopy. Or less preferably, sonde enteroscopy. Hold bleeding scan and angiography unless patient is actively bleeding.
 - Now: capsule → push enteroscopy, exploratory laparotomy, medical
 - Medical management: Used if:
 - vascular lesions are diffuse throughout bowel
 - inaccessible location
 - continue to bleed despite endoscopic or surgical therapy
 - patient is poor candidate for surgery or endoscopy
 - Therapy: supportive care, estrogen (no difference when used for andiodysplasia⁵), Octreotide, aminocaproic acid.

Evaluation of Small Intestinal Bleeding

- **Capsule** – Visualization of the entire bowel. Can help guide management
 - If see tumor → proceed directly to laparoscopic surgery.
 - If the site of bleeding is identified to be in the proximal small bowel and there is no mass → push enteroscopy will be used to re-identify the site and cauterize the lesion.
 - If in distal small bowel → surgical intervention coupled with intraoperative enteroscopy
 - Better than push enteroscopy in localizing bleeds. Capsule: bleeding source found in SB in 34/50 patients (68%). Push enteroscopy: bleeding source found in SB in 16/50 patients (32%)⁶
- **Small Bowel Series**
- **Enteroclysis:** Has increased sensitivity over standard small bowel series:

- Correctly diagnosed 96%, while SB series diagnosed only 72%. False negative rate was 7%, vs. false negative rate of SB series was 41%.⁷
- But requires more time, more side effects (gagging/retching), more radiation exposure. Thus, SBS is still preferred screening exam.
- **Radioisotope Bleeding Scan** – see above
- **Angiography** – see above
 - Helical CT angiography – 72% diagnostic yield.⁸
- **Push enteroscopy** – Can localize in 45-80% of patients. However, only see 40-60cm beyond ligament of Treitz. Benefit: diagnostic and therapeutic (cauterization).
- **Sonde enteroscopy** - 50-70% of small bowel mucosa is observed. Ileum is reached in 75% of exams, 10% reach ileocecal valve. Push plus sonde enteroscopy can improve diagnostic yield by 28%⁹
 - Negatives:
 - takes 6 - 8hours
 - adhesions, strictures, motility disrupts visualization
 - lack of tip deflection, inability to readvance the instrument once withdrawn
 - No therapeutic capability.
- **Surgery:**
 - Treat surgically if:
 - > 4 units PRBC/24 hrs
 - Bleeding continues for 72 hours
 - Rebleeding recurs within 1 week
 - Simple exploratory laparotomy without intraoperative endoscopy has only 10% success rate
 - IOE: diagnostic yield is 70%-100%. Complication rates of 16% with mortality rates up to 11%.¹⁰
 - Angiodysplasia are the most common nonpalpable cause of bleeding
 - Resection is the definitive Rx.
 - IOE and sonde enteroscopy were the same on 77% of examinations.¹¹
 - Long-term f/u: rebleeding rate of 0-45%
 - Lesions of SB identified in 16/20 (12 AVMs, 4 others) → segmental SBR. At 19 month f/u, 30% rebleeding rate, 2 died of massive hemorrhage in whom enteroscopy was negative¹²
 - Rebleeding within 28 months was 27%, 73% of which occurred within 6 months.¹³

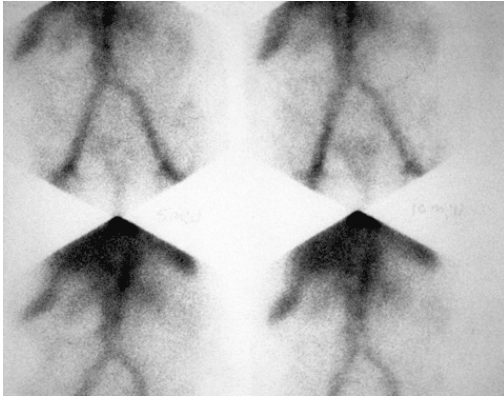
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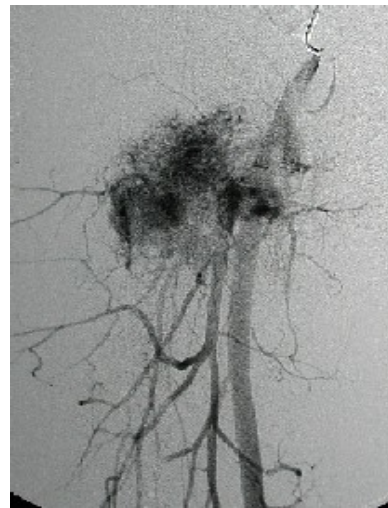
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Radiolabelled scan:



Selective Mesenteric Angiography



- Angio of AVM: Visualization of
 - ecstatic, slow-emptying veins
 - vascular tufts
 - early-filling veins
- AVM on Colonoscopy: Red, flat lesions 2-10mm in diameter, sometimes accompanied by a feeding vessel.

