Lower GI Bleeds

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Index Case

maroon/bright red: think lower GI bleed

Mr. X, 78 years old, presents w/ maroon stool and eighteen hours of prior bleeding per rectum.

Not necessarily, there is enough overlap between the two groups that you would want further studies!

And if melena: think upper GI, right?
Before we order tests, let’s check his history

A single contrast Barium enema shows multiple outpouches throughout the course of colon.

She looks like an Aunt Minny (w/ diverticulosis) to me!

What fits the DDX for these?

Courtesy Dr. Herbert Gramm
Diverticulosis of the transverse colon

Multiple Diverticula

Double contrast barium study

Courtesy Dr. Herbert Gramm
Origins of diverticula

Note how the diverticula appear on the mesenteric side of the colon.

The Vasa recta penetrate the circular muscle layer of the colon, weakening the wall.

Source: © 2002 UpToDate
Originally from Textbook of Gastroenterology, Yamada, 95
Most common sites of GI Bleeds

- Sigmoid colon most common
- Rectum and bladder can mimic sigmoid

Most Common Causes of Lower GI Bleeds
- Diverticulosis
- Angiodysplasias
- IBD
- Ano-rectal disease
- Neoplasia

Source: http://www.vh.org/Providers/Textbooks/ElectricGiNucs/AnatImages/BleedSites.html
Approach to locate a Lower GI Bleed

Place a Nasogastric tube

No blood

Colonoscopy

Blood

Institute upper GI bleed w/u

Identify source

Colonoscopy

Negative/>>Blood

Scintigraphy

(9) Diagnostic accuracy of 72 - 86 % in patients

Treat as appropriate

Arteriography

(10) Diagnostic accuracy rates range from 24 to 91 %

(11) Success of 14 to 72%
Let us assume we find nothing on colonoscopy.. welcome to nuclear medicine

It can detect blood flow at .1cc/min

Source: Introduction to Nuclear Medicine, GE Medical Systems (www.gemedical.com)

Scintigraphy : radionuclide in, gamma particles out recorded by an external scintillation camera.

Scintillation is random fluctuation of EM field strengths about the mean.
What type of Technetium do we use for medical imaging?

<table>
<thead>
<tr>
<th>Isotope</th>
<th>Half Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tc-95</td>
<td>20.0 hours</td>
</tr>
<tr>
<td>Tc-95m</td>
<td>61.0 days</td>
</tr>
<tr>
<td>Tc-96</td>
<td>4.28 days</td>
</tr>
<tr>
<td>Tc-96m</td>
<td>51.5 minutes</td>
</tr>
<tr>
<td>Tc-97</td>
<td>2600000.0 years</td>
</tr>
<tr>
<td>Tc-97m</td>
<td>90.0 days</td>
</tr>
<tr>
<td>Tc-98</td>
<td>4200000.0 years</td>
</tr>
<tr>
<td>Tc-99</td>
<td>2.13E7 years</td>
</tr>
<tr>
<td>Tc-99m</td>
<td>6.0 hours</td>
</tr>
<tr>
<td>Tc-100</td>
<td>14.2 minute</td>
</tr>
</tbody>
</table>

Tc-99m 6.0 hours

Glenn Seaborg, the proposer of the *Actinide series* in the Period Table, co-discovered Tc-99m with Emilio Segre.

Source: http://www.nobel.se/chemistry/laureates/1951/seaborg-bio.html
Source: http://www.atomicmuseum.com/tour/nuclearmedicine.cfm
Companion Patient 1: Mr. Y, a 77 year old man with ESRD, presents with bright blood per rectum

Tc-99m is labeled to autologous RBCs
Dynamic scintigraphy performed with a 1 frame/min resolution for 48 minutes

There is radioactive uptake ascending from the cecum to the colon.
Changing lookup color
Companion Patient 2: This patient had an ascending bleed from the cecum.

Courtesy: Kevin Donohoe, MD
Companion Patient 3: Notice the bleed through the small bowel

Courtesy: Kevin Donohoe, MD
Index case

Back to Mr. X. After a positive scintigraph, a mesenteric angiogram is performed.

"78 year old man with hx of diverticulosis and right hemicolecctomy now with recurrent LGIB of obscure source. Localize the source of GI bleed."

Angio can detect blood flow at .5 cc/min.
A view of the IMA

An Angiographers view of the world

Small Intestine
Hastra
Ascending branch of the Left Colic Artery
IMA
Aorta
Catheter injecting Ioversol/Optiray

Source: BIDMC PACS and consultation with Dr. Mastromatteo
The mesenteric arteriogram was performed to localize the lesion.
A more oblique view to focus in the area of suspected extravasation

Note the extravasation of contrast in the left side of the pelvis. This is the bleeding site.

Transcatheter infusion of vasopressin caused cessation of the bleeding with no recurrence on repeat angiogram.
Summary

• Use your radiology knowledge to pin-point the etiology of a presentation.
• Rule out an Upper GI Bleed via NG aspirate.
• Order a colonoscopy to study the bowel and rule out carcinoma.
• Use scintigraphy to localize subtle bleeds.
• Follow up with angiography and tx.
• Do not be afraid to repeat tests if you are surprised by a result.
References


5. Lower Gastrointestinal Bleeding, Burt Cagir, MD and E. Cirincione (http://www.emedicine.com/med/topic2818.htm)

6. Harrison’s Online: Chapter 44: Gastrointestinal Bleeding, Colonic Sources of Bleeding

7. Harrison’s Online: Chapter 283: Gastrointestinal Endoscopy


11. UpToDate, Colonic diverticular bleeding
Acknowledgements

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