Rectal Bleeding in Infancy

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Objectives

- To understand the common and uncommon causes of rectal bleeding in infancy
- To learn the key history and physical exam findings in patients
- To determine the best diagnostic approach to individual patients with rectal bleeding
- To understand when to refer to GI

Outline

- History and initial assessment
- Physical exam findings
- Laboratory and imaging work-up
- Differential diagnosis
- When to refer
Case #1

An 18 month-old healthy infant presents with intermittent BRBPR over the past 2 weeks. Over the last 3 days, his stools have been without blood. No fevers, complaints of pain, diarrhea, or constipation. Physical reveals a happy infant, growing well. Rectal exam with a healed fissure at 6 o’clock. Heme negative.

What is your diagnosis and course of action?

1) Infectious colitis - stool cultures
2) IBD - refer to GI
3) Anal fissure - reassurance
4) Bleeding disorder - initiate lab work-up

History and initial assessment

• ABCs
  • Confirm hemodynamic stability with vital signs
  • Pallor and tachycardia suggestive of blood loss
  • Delayed capillary refill and hypotension require IMMEDIATE RESUSCITATION
• The majority of infants are healthy
  • Child appears healthy
  • Normal growth and development
  • No past history of disease
History and initial assessment

- Is it blood?
  - Tomatoes, cherries, and beets may look red
  - Grape juice and berries may resemble melena

- Fecal occult testing
  - Relatively reliable
  - False positives with peroxidase containing foods (e.g., broccoli, cherries, turnips, etc.)

- Neonatal history
  - Sepsis, h/o NEC, prior surgery, liver disease
  - Prolonged bleeding after procedures (e.g., circumcision) suggest hematologic disorder

- Family history - allergic disorders, bleeding disorders, IBD

- Onset of bleeding
  - After weaning - suggests cow’s milk or soy allergy
  - Initiation of daycare - risk of infectious etiology

- Type of bleeding
  - Hematochezia on outside of stools suggests anal/rectal cause (e.g., fissure, LNH)
  - Hematochezia mixed with stool suggests colonic etiology
  - Maroon stools suggestive of vigorous hemorrhage (Meckel’s)
  - Currant jelly suggestive of ischemia (intussusception)
  - Mucous and loose stools possibly infectious
Case #2

A family has recently joined your practice. In your initial visit with the family, the mother reports that the 12 month old has a history of rectal bleeding.
The infant is thriving, has been on a strict breast milk diet.
The mother is wondering if it's safe to initiate food and cow's milk.
You are more concerned with a rash on the child’s feet.

What's the diagnosis?

1) Congenital rubella
2) Scabies
3) CMV
4) Blue rubber bleb nevus syndrome
5) IBD

Blue rubber bleb nevus syndrome
Physical exam findings

- Fever suggests infectious/inflammatory etiology
- FTT in infants typical of chronic insults (protein allergy, Hirschsprung disease)
- Rectal exam
  - External visualization and digital exam
  - ANAL FISSURES are #1 cause of rectal bleeding in infants
- Causes with normal exam findings
  - Meckel's diverticulum
  - Lymphonodular hyperplasia

<table>
<thead>
<tr>
<th>PE Finding</th>
<th>Underlying disease</th>
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</thead>
<tbody>
<tr>
<td>Anal fissure</td>
<td>Constipation, IBD</td>
</tr>
<tr>
<td>Rectal mass on DRE</td>
<td>Polyp</td>
</tr>
<tr>
<td>Eczema/FTT</td>
<td>Food allergy</td>
</tr>
<tr>
<td>Abdominal mass</td>
<td>Intussusception</td>
</tr>
<tr>
<td>Jaundice, ascites, hepatomegaly</td>
<td>Liver disease</td>
</tr>
</tbody>
</table>

Adapted from Walker et al. Pediatric Gastrointestinal Disease. 4th Ed.

Laboratory and imaging work-up

- CBC
  - Fe deficiency suggests chronic blood loss
  - Hypereosinophilia = allergy/parasites
  - Platelets
- ESR/CRP suggest inflammation/infection
- PT/PTT
- Liver panel
- Stool cultures
Laboratory and imaging work-up

- RBC scan
  - Cells labeled with Tc99m
  - Bleeding rate 0.5 ml/min or higher
- Angiography
  - Bleeding rate of 0.5 ml/min or higher
  - Localizes bleed 50%

Differential diagnosis

- Painful bleeding
- Painless bleeding
- Growth failure

Differential 1: Painful bleeding

- Anal Fissure
  - Often midline
  - Painful passage of stool leads to withholding
  - History is critical to diagnosis
- Can anal fissures be painless?
  - Yes
  - If associated with perianal tags/fistulae, consider Crohn’s disease
Differential 1: Painful bleeding

- Intussusception
  - 65% by 1 year of age
  - 80% by 2 years of age
  - Often associated with lead point (Meckel's diverticulum, LNH, lymphoma)
  - Palpable mass and currant jelly stool not always present
- LGI bleeding suggests bowel ischemia - medical emergency

Intussusception and gastroenteritis

- Infection
  - Bacteria
    - Salmonella
    - Shigella
    - E. coli
    - Campylobacter
  - Parasites
    - Entamoeba histolytica
  - Immunosuppressed patients
  - CMV
  - Norwalk virus
  - C. difficile
  - Aeromonas hydrophilia
    - 25% of patients with bloody diarrhea
    - Can be prolonged

C. diff in infancy

Differential 2: Painless bleeding
- Meckel's diverticulum (Rule of 2’s)
  - Abnormal remnant of the vitelline duct
  - Incidence 2%; males 2:1; 2% symptomatic
  - Over 50% contain heterotropic tissue; 2 most common - gastric and pancreatic
  - Pathophysiology of typical presentation
    - Heterotropic gastric mucosa secretes acid
    - Ulcerates adjacent mucosa (most often ileal)
    - Leads to brisk and self-limited bleeding in a previously healthy infant
  - Treatment is surgical resection

99mTc pertechnetate scan
Differential 2: Painless bleeding

- Lymphonodular hyperplasia (LNH)
  - Yellow nodules on colonoscopy (enlarged lymphoid follicles)
  - Ulceration leads to hematochezia
  - May be associated with food allergy

Differential 3: Growth failure

- Cow’s milk protein allergy (CMPA)
  - GI symptoms (50-80%)
  - Skin lesions (20-40%)
  - Respiratory (5-25%)
- The numbers
  - 15% of infants have signs of intolerance (< 1 yoa)
  - 2-4% of children have CMPA
  - 50-65% develop tolerance by age 1
  - >80% develop tolerance by age 5
**Differential 3: CMPA**

<table>
<thead>
<tr>
<th>IMMEDIATE REACTIONS</th>
<th>LATE REACTIONS</th>
</tr>
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<tbody>
<tr>
<td>Anaphylaxis</td>
<td>Atopic dermatitis</td>
</tr>
<tr>
<td>Urticaria</td>
<td>Chronic diarrhea</td>
</tr>
<tr>
<td>Wheezing</td>
<td>Poor growth</td>
</tr>
<tr>
<td>Rhinitis</td>
<td>PLE</td>
</tr>
<tr>
<td>Dry cough</td>
<td>GERD</td>
</tr>
<tr>
<td>Vomiting</td>
<td>Chronic vomiting</td>
</tr>
<tr>
<td>Angioedema</td>
<td>Hypoalbuminemia</td>
</tr>
<tr>
<td>Laryngeal edema</td>
<td>Eosinophilic infiltrate</td>
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**Differential 3: CMPA - flex sig**

A) Focal erosions  
B) Hemorrhage  
C) Nodular hyperplasia
Differential 3: CMPA -histology

A/B/C all show eosinophils
Peripheral eosinophilia did not correlate with disease severity

Lee HI et al. Kor J Ped 2008;51:276-285

Case #3

18 m/o presents with anemia, FTT, and a history of bloody stools
Physical exam reveals a thin and pale patient with normal vital signs. The child has a rash on his back and the following finding on rectal exam:

Case 3: What's your diagnosis?

1) Idiopathic anal fissure
2) Hirschprung disease
3) Crohn’s disease
4) Chronic granulomatous disease
5) Rotavirus
Differential 3 - Growth failure

- Inflammatory bowel disease
- Early onset IBD occurs in children under 1 year
- Often presents similar to immunodeficiency
- Crohn's with pancolitis and ileal disease
- Associated findings
  - Anemia, fistulae, infection
- Genetic basis affects immune system

Differential 3: IBD

<table>
<thead>
<tr>
<th>Disease</th>
<th>Cardiac failure</th>
<th>Renal failure</th>
<th>Type of failure</th>
<th>Fluid balance</th>
<th>Antibiotics</th>
<th>Ready for surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes</td>
<td>No</td>
<td>Dehydration</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>No</td>
<td>Yes</td>
<td>Hypertension</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

IL-10 receptor deficiency

- IL-10 anti-inflammatory
- Defect in receptor leads to aberrant immune activation
- Severe phenotype
- Stem cell transplant curative

Glocker EO et al. NEJM 2009:361; 2033-45

Ruegger FM et al. JPGN 2006:43:603-609
When to refer patients?

- Bleeding associated with weight loss
- Bleeding associated with pain
- Family history of or concern for IBD
- Suspicion of CMPA
- Past history of bleed requiring hospitalization or transfusion
- What’s your comfort zone?

Thank you!

UCSF Peds GI

(415)-476-5892

References

1) www.aap.org (American Academy of Pediatrics)
2) www.cdhnf.org (Children’s Digestive Health and Nutrition Foundation)
4) www.pedsinreview.aappublications.org