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Jill Lowers, Arthur Jaffe, Joseph A. Zenel, Michael D. Cabana, Clement Donahue and Alan Uba

*Pediatrics in Review* 2009;30;146
DOI: 10.1542/pir.30-4-146

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Four Infants Who Have Red, “Bloody” Stools

Cases 1, 2, 3: Jill Lowers, MD,* Arthur Jaffe, MD,* Joseph A. Zenel, MD†; Case 4: Michael D. Cabana, MD, MPH,§ Clement Donahue, MD,* Alan Uba, MD‡

Case 1 Presentation
A 2-year-old, previously healthy boy presents to the clinic with a history of 24 hours of fussiness, decreased appetite, and several short-lived episodes of acute abdominal pain. During the past 8 hours he has had several red, “bloody” stools. There is no vomiting.

Physical examination reveals an alert child whose vital signs are normal. His abdomen is soft and nondistended. A palpable “mass” extends through the right upper and lower quadrants. Rectal examination does not reveal any fissures or tears. Auscultation reveals diminished bowel sounds. His remaining physical findings are within normal limits. After examination, the patient passes a red-colored stool (Fig. 1). Laboratory examination shows normal complete blood count and serum electrolyte concentrations. Stool guaiac testing is positive. Additional testing reveals the diagnosis.

Case 2 Presentation
A 2-year-old healthy girl presents with the complaint of a single large, red, “bloody” stool. She has had no vomiting, diarrhea, abdominal pain, fussiness, fever, or other systemic complaints. She has no history of constipation. Her mother brings the stool for examination (Fig. 2). Physical examination reveals an alert, playful child whose vital signs are normal. Findings on abdominal examination are unremarkable, and the rectal examination does not reveal any fissures or tears. The remainder of her physical examination is normal. Stool guaiac testing is negative. Additional history reveals the diagnosis.

Case 3 Presentation
A 5-month-old boy who has a recent history of acute otitis media presents with three episodes of red, “bloody” stools in the past 48 hours. The child is otherwise well and has no vomiting, diarrhea, fever, or abdominal pain. His appetite is good, and he drinks 8 oz of formula every 3 to 4 hours. He has no prior history of constipation or formula intolerance. Currently, he is taking oral cefdinir for the otitis media. His mother brings a stool sample for examination (Fig. 3).
Physical examination reveals an alert and interactive infant whose vital signs are normal. His abdomen is benign, and the rectal examination reveals no fissures or tears. Other physical findings are unremarkable. Laboratory examination reveals a negative stool guaiac test. Additional investigation reveals the diagnosis.

Case 4 Presentation
A 6-month-old healthy boy presents to the clinic with the complaint of acute onset of “blood” in the diaper. Two hours ago, he had a large, red “bloody” stool. Earlier in the day, he had two loose stools, but had no fever, vomiting, or diarrhea. He has been consuming 8 oz of formula every 3 to 4 hours and has no other systemic complaints. His mother brings a stool sample for examination (Fig. 4).

Physical examination reveals a comfortable child whose vital signs are normal. His abdomen is mildly distended but is soft and nontender and has no hepatosplenomegaly or masses. Other physical findings are unremarkable. Stool guaiac testing is negative. Additional history reveals the diagnosis.
Diagnoses

Case 1: Intussusception
The patient underwent an air contrast enema for suspected intussusception (Fig. 5). The diagnosis was confirmed and the intussusception reduced successfully without complication. The patient’s bloody stools resolved, the intussusception did not recur, and the patient’s appetite returned several days later.

Case 2: Cake Frosting Ingestion
Additional questioning of the mother revealed that the patient had eaten the entire contents of a 16-ounce can of red cake frosting the day before. She was not given any additional frosting, and there were no more red stools.

Case 3: Cefdinir-Iron Interaction
According to the cefdinir packet insert, there is a documented association of passing red-orange-colored stools by patients receiving oral cefdinir while on an iron diet. The reddish color is believed to be due to the formation of a nonabsorbable complex in the gastrointestinal tract between cefdinir or its breakdown products and iron (commonly found in infant formula). Although this drug-diet interaction is not harmful, families frequently request changing to another oral antibiotic medication because the stool color is distressing. This patient was switched to amoxicillin therapy to complete his antibiotic course, and the red-colored stools resolved (as did the acute otitis media).

Case 4: Kool-Aid® Ingestion
After additional questioning, another adult caregiver revealed having modified the infant’s diet that day. Earlier, he had consumed approximately 8 oz of strawberry-colored Kool-Aid®. The increased sugar load from the drink may have caused an osmotic diuresis, expediting stool transit time and allowing the artificial coloring to remain unchanged by digestion. The Kool-Aid® was discontinued, and there were no more episodes of red stools.

Discussion
Bloody stools are a relatively common chief complaint in pediatric primary care. Hematochezia, the passage of bloody bright red- or maroon-colored stools, is due to a distal gastrointestinal hemorrhage or to massive hemorrhage at a more proximal site above the colon. Although some ingested medications can cause gastrointestinal bleeding, many ingested foods or medications cause red stools that are commonly mistaken for “bloody.” Therefore, it is important for the primary care clinician to be able to distinguish true bloody stools from other red-colored stools and to be acquainted with the broad differential diagnosis for hematochezia.

Obtaining an accurate history is essential for finding the cause of hematochezia. Key pieces of information include onset, frequency, and amount of the red stools; recent ingestions, travel, or ill contacts; and other associated symptoms. Physical examination may reveal the diagnosis or evidence of an ill child, but the findings generally are unrevealing. Therefore, it is essential to evaluate a stool sample for the presence of blood by performing a stool guaiac test. The results of the history and physical examination combined with the confirmed presence or absence of blood in the stool should help determine the appropriate underlying diagnosis.

Stool obtained from either a diaper or rectal examination is easily tested for the presence of blood by in-office observation of the conversion of guaiac from a colorless appearance to a blue color when combined with the stool sample. Guaiac is a leukodye, a substance that employs peroxidase-like activity found in hemoglobin to generate an oxidative reaction with a reagent to produce a blue color. The most common guaiac-containing fecal occult blood tests are Hemoccult™ (Beckman Coulter Primary Care Diagnostics, Fullerton, Calif.), Seracult™ (Propper Manufacturing Co, Inc, Long Island City, NY), Coloscreen™ (Fisher Scientific, Philadelphia, Pa.), and HemoFEC™ (Roche Diagnostics, Indianapolis, Ind.).
Because the guaiac test relies on peroxidase activity, any substance that has peroxidase activity can cause a false-positive result, including rare red meat, horseradish, turnips, tomatoes, and fresh red cherries. In addition, low concentrations of ascorbic acid can inhibit hemoglobin peroxidase activity. As a result, vitamin C ingestion can lead to a false-negative result.

Common mimickers of hematochezia also include ingestion of red dye-containing foods such as red juices and other colored drinks, candy, and colored gelatin as well as tomatoes, beets, cranberries, and red peppers. Medications, including rifampin, diazepam syrup, ampicillin, and phenolphthalein (found in some laxatives), also can cause red stools that are mistaken for bloody stools. The stools appear red because of the natural or artificial coloring. However, stools containing these substances are guaiac-negative.

In the pediatric population, most causes of hematochezia are benign, but pediatric emergencies do occur. Differential diagnoses cover several major categories, including allergies, infections, intussusception, Meckel diverticulum, rectal fissures and tears, ingestions, and coagulation disorders.

Intussusception presents with the sudden onset of intense crampy abdominal pain, an abdominal mass, and late findings of currant jelly stools. Meckel diverticulum, a residual omphalomesenteric duct containing gastric mucosa that ulcerates adjacent tissue, generally presents with painless rectal bleeding. Colonic polyps are small outgrowths along the bowel wall that also present with painless rectal bleeding. Volvulus or midgut malrotation usually presents in infants who have bilious emesis, abdominal distention, and hematochezia. However, malrotation can present with chronic abdominal pain, distention, recurrent vomiting, or acute intestinal obstruction in older children. Anal fissures or tears often are associated with constipation. Children present with small amounts of bright red blood that streaks the surface of their stools.

Infants who have protein-induced proctocolitis or enterocolitis, whether breast- or bottle-fed, usually present with vomiting, fussiness, and poor weight gain and have blood-streaked or grossly bloody stools. Within weeks of dietary modification, symptoms improve. Inflammatory bowel disease, both ulcerative colitis and Crohn disease, may present with hematochezia, failure to thrive, weight loss, early satiety, abdominal pain, chronic diarrhea, and fevers. Inflammatory bowel disease usually is diagnosed in the adolescent years, but may occur in younger children.

Infectious causes of bloody stools include infections with *Escherichia coli*, *Salmonella*, *Shigella*, *Tersinia*, *Campylobacter jejuni*, *Clostridium difficile*, schistosomes, and viruses, including norovirus and rotavirus. Patients usually have self-limited bloody diarrhea, vomiting, and anorexia. *E. coli* O157H is associated with hemolytic-uremic syndrome, which has a prodrome of bloody diarrhea, followed by anemia, thrombocytopenia, and renal failure.

Coagulation disorders, including thrombocytopenias and coagulopathies, may cause hematochezia. Of note, oral medications that may cause gastrointestinal irritation with bleeding include aspirin, indomethacin, ibuprofen, and corticosteroids.

**Patient Courses**

Of the four cases presented, only the child in Case 1 had hematochezia, indicating an emergent condition that was referred appropriately to a local emergency department for immediate treatment. The remaining three cases were mimickers of hematochezia that were diagnosed easily and treated in the outpatient setting.

**Summary**

The “bloody” stool is a common complaint in the primary care setting. Obtaining a history, performing a physical examination, and testing for fecal occult blood should help the practitioner distinguish hematochezia from the red stool due to ingestion of natural and artificial dyes and other substances that produce a red color. Although often benign, hematochezia may indicate significant underlying gastrointestinal pathology.

**Suggested Reading**


Jaffe RM, Young DS, MacLowry JD. False-negative stool occult blood tests caused by ingestion of ascorbic acid (vitamin C). *Ann Intern Med.* 1975;83:824–826


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