Lower Gastrointestinal Bleeding in Children

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KEYWORDS

• Pediatric • Gastrointestinal bleeding • Hematochezia • Hemostasis • Resuscitation • Colonoscopy

KEY POINTS

- Common causes of significant lower gastrointestinal bleeding (LGIB) in children are often different from those seen in adults.
- Endoscopy and colonoscopy are the mainstays of initial diagnostic testing in most children with LGIB.
- In the absence of an endoscopic diagnosis, other diagnostic modalities may be used, with varying degrees of diagnostic yield depending on the clinical scenario.
- The pediatric gastroenterologist is well served in becoming familiar with available hemostatic tools for small-diameter endoscopes, as well as developing comfort in performing at least 2 modes of therapeutic technique.

INTRODUCTION

Gastrointestinal (GI) bleeding in children, although uncommon, can be life threatening. Lower GI bleeding (LGIB) in pediatric patients occurs less commonly then upper GI bleeding (UGIB). However, its presentation often demands a similar degree of urgency. Causes of LGIB can run the gamut of severity from benign conditions such as anal fissures to an exsanguinating lesion, for example a vascular anomaly, and therefore deserves a careful yet expedient approach. This article reviews definitions and important causes of LGIB in children that typically require endoscopic knowledge and skill for diagnosis. We also discuss approaches to the management of LGIB from initial evaluation through definitive endoscopic therapies.

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DEFINITIONS

LGIB can be acute or chronic, and assumed to be originating distal to the ligament of Treitz at the duodenojejunal junction, which marks the anatomic transition between the upper and lower GI tract. Acute LGIB is loosely characterized as active bleeding of less than 3 days' duration accompanied by anemia, hemodynamic compromise, altered consciousness, or the need for a blood transfusion.[1] In adults, at least 10% to 20% of GI bleeding is thought to occur from colonic and rectal sources, with diverticulitis considered the most common cause of clinically significant bleeding in adults.[1,2] In contrast, colonic diverticulitis is an extremely rare condition in children. The most common causes of LGIB in children include anal fissures, allergic colitis, enteric infections, and juvenile polyps.

Determining the source of either an upper or lower GI bleed is aided by accurate characterization of the appearance of stool during the bleeding event. In addition, it may be helpful to document the presence or absence of hematemesis, which is usually associated with bleeding proximal to the ligament of Treitz. Melena is stool that can be described as dark and sticky, like "tar," and usually represents the end-product of blood after traveling from the upper or middle digestive tract. Occasionally, bleeding from the proximal colon can appear melanotic. In contrast, hematochezia describes bright red blood per rectum, which often arises from the distal colon or rectum.

However, these stool patterns must be interpreted with caution, because profuse bleeding from the upper GI tract can appear as hematochezia, especially in younger patients with shorter intestinal transit times. Even in adult populations, up to 11% of patients with hematochezia were found to have an upper intestinal bleeding source.[3] This phenomenon is likely also because blood is a cathartic and any source of active bleeding can cause frequent loose melena or hematochezia. Furthermore, subjective variability in interpretation of stool color exists, although this can be minimized by using a standardized stool color card, which has been shown to aid in distinguishing upper (2 darker colors) from lower (2 brightest red colors) sources of GI bleed.[4]

EPIDEMIOLOGY

In the adult literature, UGIB is thought to occur at least 5 times as frequently as LGIB. In addition, the incidence of LGIB increases with age, reflecting its association with the onset of common conditions such as diverticulitis and angiodysplasia.[2] There is a paucity of data in the literature concerning the epidemiology of GI bleeding in childhood. A nationwide emergency department database analysis from 2006 to 2011 identified just fewer than 450,000 pediatric emergency department visits (ages birth to 19 years, with a median age of 9 years) to be associated generally with GI bleeding, of which UGIB accounted for 20% and LGIB for 30%.[5] Patients who were aged 15 to 19 years accounted for 40% of encounters, whereas patients aged 0 to 5 years comprised 38% of the total number of GI bleeding visits. This large dataset review also detected an increase in visits for GI bleeding during the study period from 82.18 per 100,000 children in 2006 to 93.93 per 100,000 in 2011. The greatest increase in encounters was seen in LGIB in patients 10 to 19 years old. Interestingly, 83% of children did not have other medical comorbidities. In multivariable logistic regression analysis, the investigators identified the following factors to be associated with increased risk of pediatric hospital admission for GI bleeding:

- Presence of $\geq$3 comorbid conditions (odds ratio [OR] 112.2)
- Presentation to a teaching hospital (OR 3.2)