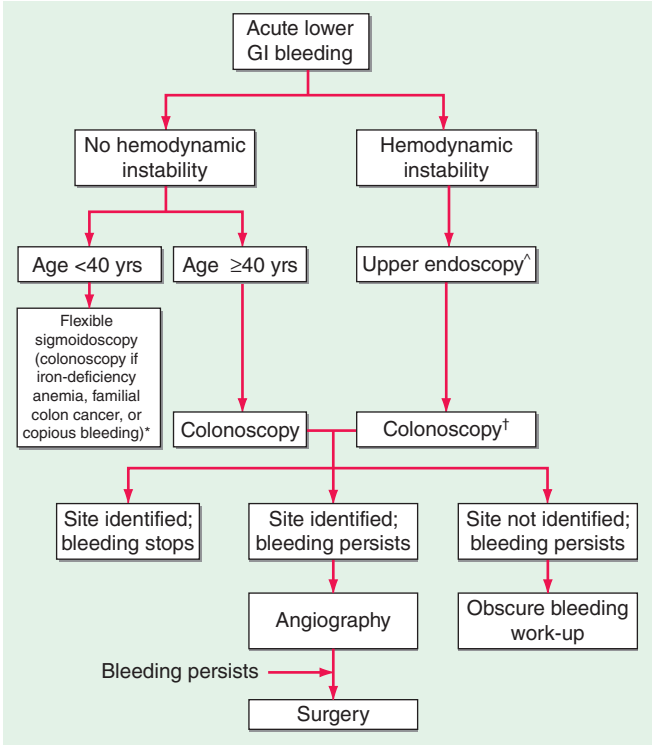

FIGURE 57-2 Suggested algorithm for patients with acute lower gastrointestinal (GI) bleeding. *Some suggest colonoscopy for any degree of rectal bleeding in patients <40 years as well. ^If upper GI endoscopy reveals definite source, no further evaluation is needed. †If massive bleeding does not allow time for colonic lavage, proceed to angiography.

in which case angiography is recommended. Sigmoidoscopy is used primarily in patients <40 years old with minor bleeding. In patients with no source identified on colonoscopy, imaging studies may be employed. ^{99m}Tc-labeled red cell scan allows repeated imaging for up to 24 h and may identify the general location of bleeding. However, radionuclide scans should be interpreted with caution because results, especially from later images, are highly variable. Multidector computed tomography (CT) "angiography" is an increasingly used technique that is likely superior to nuclear scintigraphy. In active LGIB, angiography can detect the site of bleeding (extravasation of contrast into the gut) and permits treatment with embolization. Even after bleeding has stopped, angiography may identify lesions with abnormal vasculature, such as vascular ectasias or tumors.

EVALUATION AND MANAGEMENT OF OBSCURE GIB

Obscure GIB is defined as persistent or recurrent bleeding for which no source has been identified by routine endoscopic and contrast x-ray studies; it may be overt (melena, hematochezia) or occult (iron-deficiency anemia). Current guidelines suggest angiography as the initial test for massive obscure bleeding, and video capsule endoscopy, which allows examination of the entire small intestine, for all others. Push enteroscopy, usually performed with a pediatric colonoscope, to inspect the entire duodenum and proximal jejunum also may be considered as an initial evaluation. A systematic review of 14 trials comparing push enteroscopy to capsule revealed "clinically significant findings" in 26% and 56% of patients, respectively. However, in contrast to enteroscopy, lack of control of the capsule prevents its manipulation and full visualization of the intestine; in addition, tissue cannot be sampled and therapy cannot be applied.

If capsule endoscopy is positive, management is dictated by the finding. If capsule endoscopy is negative, current recommendations suggest patients may either be observed or, if their clinical course mandates (e.g., recurrent bleeding, need for transfusions or hospitalization), undergo further testing. "Deep" enteroscopy (e.g., double-balloon, single-balloon, and spiral enteroscopy) is commonly the next test undertaken in patients with clinically important obscure GIB because it allows the endoscopist to examine, obtain specimens from, and provide therapy to much or all of the small intestine. CT and magnetic resonance enterography also are used to examine the small intestine. Other imaging techniques sometimes used in evaluation of obscure GIB include ^{99m}Tc-labeled red blood cell scintigraphy, multidetector CT "angiography," angiography, and ^{99m}Tc-pertechnetate scintigraphy for Meckel's diverticulum (especially in young patients). If all tests are unrevealing, intraoperative endoscopy is indicated in patients with severe recurrent or persistent bleeding requiring repeated transfusions.

POSITIVE FECAL OCCULT BLOOD TEST

Fecal occult blood testing is recommended only for colorectal cancer screening and may be used beginning at age 50 in average-risk adults and beginning at age 40 in adults with a first-degree relative with colorectal neoplasm at ≥60 years or two second-degree relatives with colorectal cancer. A positive test necessitates colonoscopy. If evaluation of the colon is negative, further workup is not recommended unless iron-deficiency anemia or GI symptoms are present.

58 Jaundice

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Jaundice, or icterus, is a yellowish discoloration of tissue resulting from the deposition of bilirubin. Tissue deposition of bilirubin occurs only in the presence of serum hyperbilirubinemia and is a sign of either liver disease or, less often, a hemolytic disorder. The degree of serum bilirubin elevation can be estimated by physical examination. Slight increases in serum bilirubin level are best detected by examining the sclerae, which have a particular affinity for bilirubin due to their high elastin content. The presence of scleral icterus indicates a serum bilirubin level of at least 51 μmol/L (3 mg/dL). The ability to detect scleral icterus is made more difficult if the examining room has fluorescent lighting. If the examiner suspects scleral icterus, a second site to examine is underneath the tongue. As serum bilirubin levels rise, the skin will eventually become yellow in light-skinned patients and even green if the process is long-standing; the green color is produced by oxidation of bilirubin to biliverdin.

The differential diagnosis for yellowing of the skin is limited. In addition to jaundice, it includes carotenoderma, the use of the drug quinacrine, and excessive exposure to phenols. Carotenoderma is the yellow color imparted to the skin of healthy individuals who ingest excessive amounts of vegetables and fruits that contain carotene, such as carrots, leafy vegetables, squash, peaches, and oranges. In jaundice the yellow coloration of the skin is uniformly distributed over the body, whereas in carotenoderma the pigment is concentrated on the palms, soles, forehead, and nasolabial folds. Carotenoderma can be distinguished from jaundice by the sparing of the sclerae. Quinacrine causes a yellow discoloration of the skin in 4–37% of patients treated with it.

Another sensitive indicator of increased serum bilirubin is darkening of the urine, which is due to the renal excretion of conjugated bilirubin. Patients often describe their urine as tea- or cola-colored. Bilirubinuria indicates an elevation of the direct serum bilirubin fraction and, therefore, the presence of liver disease.