



FIGURE 33-3 Approach to the patient with suspected malabsorption. CT, Computed tomography; ERCP, endoscopic retrograde cholangiopancreatography; GI, gastrointestinal. (Modified from Riley SA, Marsh MN: Maldigestion and malabsorption. In Feldman M, Scharshmidt BF, Sleisenger MH, editors: Sleisenger and Fordtran's gastrointestinal and liver disease: pathophysiology/diagnosis/management, ed 6, Philadelphia, 1998, WB Saunders, pp 1501–1522.)

and the specimen is analyzed for fat content. Normal fat excretion should not exceed 6 g/day. Although this test is cumbersome and nonspecific, it offers an accurate quantification of fecal fat excretion provided fat consumption is appropriate.

Tests of Pancreatic Exocrine Function

Aspiration of duodenal contents for evaluation of bicarbonate and enzyme output after stimulation of the pancreas may be the best index of pancreatic exocrine function. However, the test is invasive, is time-consuming, and is performed only in a few specialized centers. The measurement of pancreatic enzymes (i.e., fecal elastase 1) in the stool is simple and provides helpful laboratory evidence for the diagnosis of moderate to severe pancreatic insufficiency. Pancreatic calcifications seen on abdominal films or computed tomography (CT) scans indicate the presence of chronic pancreatitis. Magnetic resonance cholangiopancreatography (MRCP) and endoscopic retrograde cholangiopancreatography (ERCP) can help outline abnormal duct anatomy and may supplement CT scanning for diagnostic purposes to evaluate the sequelae of chronic pancreatitis. However, normal findings on pancreatography do not exclude the presence of pancreatic exocrine insufficiency.

Small Intestinal Biopsy

Whereas the gross appearance of the mucosa during upper GI endoscopy can provide some clues regarding the presence of a disease causing malabsorption, biopsy of the small intestinal mucosa is a key diagnostic test for diseases that affect the cellular phase of absorption. In some diseases, the histologic features are diagnostic; in others, the findings may be highly suggestive (Table 33-5). Several tissue samples should be taken from the

TABLE 33-5 UTILITY OF SMALL BOWEL BIOPSY SPECIMENS IN MALABSORPTION

FINDINGS OFTEN DIAGNOSTIC	FINDINGS ABNORMAL BUT NOT DIAGNOSTIC
Whipple's disease	Celiac disease
Amyloidosis	Systemic sclerosis
Eosinophilic enteritis	Radiation enteritis
Lymphangiectasia	Bacterial overgrowth syndrome
Primary intestinal lymphoma	Tropical sprue
Giardiasis	Crohn's disease
Abetalipoproteinemia	
Agammaglobulinemia	
Mastocytosis	

Data from Trier JS: Diagnostic value of peroral biopsy of the proximal small intestine, *N Engl J Med* 285:1470, 1971.

duodenal bulb and from the distal duodenum to enhance the diagnostic accuracy.

Imaging Studies

In patients with malabsorption, barium studies of the small bowel are usually nonspecific. Occasionally, however, distinct anatomic changes are seen, such as in jejunal diverticulosis, lymphoma, Crohn's disease, strictures, or enteric fistulas. Also, there may be a distinctive barium pattern of thin-walled, dilated loops suggestive of celiac disease. CT and magnetic resonance enterography provide a more detailed imaging of the small intestine and are more sensitive in identifying abnormalities such as active bowel inflammation, mesenteric stranding and edema, strictures, fibrofatty proliferation of the mesentery, and fistula formation.

Wireless capsule endoscopy is a noninvasive method that permits direct visualization of the small bowel mucosa and can provide a more detailed evaluation of small bowel disease