

**Approach to Malabsorption:
Where to Start?**

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Key Steps

- Identify malabsorption or maldigestion as a diagnostic possibility (history, physical, lab)
- Evaluate for steatorrhea
- Differential diagnosis
- Testing to make a specific diagnosis
- Treatment of condition

Categorization of chronic diarrhea

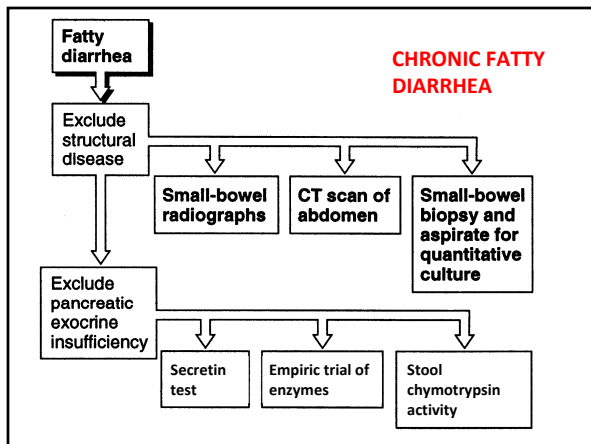
- **Chronic diarrhea**
 - Watery diarrhea
 - Osmotic diarrhea
 - Secretory diarrhea
 - Inflammatory diarrhea
 - Fatty diarrhea

Characteristics of fatty diarrhea

- Gross steatorrhea may be present
- Sudan stain or quantitative analysis positive
- Oil may be seen in commode
- Patient may complain of weight loss, gaseousness

Causes of fatty diarrhea

- **Malabsorption**
 - Mucosal disease
 - Short bowel syndrome
 - Postresection diarrhea
 - Small bowel bacterial overgrowth
 - Mesenteric ischemia
- **Maldigestion**
 - Pancreatic exocrine insufficiency
 - Inadequate luminal bile acid concentration



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Case 1

- A 24-year-old woman presents with a two year history of diarrhea and weight loss. She has 4–5 greasy stools daily and has lost 12 pounds (current weight 110 lbs., height 67"). Evaluation by her PCP included a CBC with a hemoglobin of 11.0, MCV 76. CMP was normal, except for calcium of 8. She has been treated with iron, calcium and loperamide, but is unchanged. Physical examination is negative, except she is thin and pale.

Question 1

- What would be your next step?
 - A. Anti-gliadin IgA and IgG antibodies
 - B. Anti-tissue transglutaminase antibodies
 - C. CT scan of abdomen with pancreatic protocol
 - D. Capsule enteroscopy
 - E. Upper endoscopy with small bowel biopsy
 - F. Colonoscopy with biopsy
 - G. 48-hour stool for quantitative fat excretion

Case 2

- A 70-year-old man presents to the clinic with weight loss, diarrhea, and arthralgias of five years' duration. The diarrhea consists of bulky malodorous stools passed three to four times a day. He is anorexic and has lost 40 pounds despite the development of peripheral edema. He has dyspnea on exertion. He has not noted any bleeding.

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Case 2

- Physical examination shows a cachectic man. His height is 70 inches and his weight is 140 pounds. He has bibasilar rales and cardiomegaly. A grade 2/6 aortic ejection murmur is heard. His abdomen is distended. No organomegaly or tenderness is detected. His knees are swollen and tender. Muscle wasting is prominent. Pitting edema is present to the knees. Lymph nodes are palpable in the axillary and inguinal areas.

Case 2

- Laboratory testing shows a hemoglobin of 8 g/dL, hematocrit 24%, MCV 90, serum albumin 2.1 g/dL, and an INR of 2.1.
- Radiographic examination of the small intestine shows thickened folds in the proximal small intestine with sparing of the ileum. CT scan of the abdomen shows extensive mesenteric and retroperitoneal adenopathy.

Question 2

- The most likely diagnosis in this patient is:
 - A. Lymphoma
 - B. Tuberculosis
 - C. *Mycobacterium avium* complex infection
 - D. *Tropheryma whippelii* infection
 - E. Sarcoidosis

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Case 3

- A 48-year old woman with type 1 diabetes mellitus for 22 years presents to your office because of diarrhea present for six months. The diarrhea typically occurs postprandially. It does not occur at night and is not associated with fecal incontinence. Stool consistency is thick and unformed. She has no rectal bleeding. Her weight has decreased by 15 lbs. Her blood sugars have been well controlled on a regimen of twice a day insulin injections.

Case 3

- Physical examination shows a pleasant, middle-aged woman who is not malnourished. She is 66 inches tall and weighs 150 pounds. Eyegrounds are normal. Heart and lungs are normal and there is no abdominal mass, tenderness, or organomegaly. Fecal occult blood test is negative. Neurological examination is normal.
- Laboratory testing shows a normal blood count and complete metabolic profile. Hemoglobin A1C level is 6%. Stool tests are negative for giardia antigen, ova and parasites, bacterial pathogens, and *Clostridium difficile* toxin A.

Question 3

- Your initial recommendation is:
 - A. 48-hour stool collection to quantitate steatorrhea
 - B. Celiac antibody panel
 - C. Glucose breath hydrogen test
 - D. Endoscopy with biopsies
 - E. Colonoscopy with multiple biopsies
 - F. CT scan of abdomen with pancreatic protocol

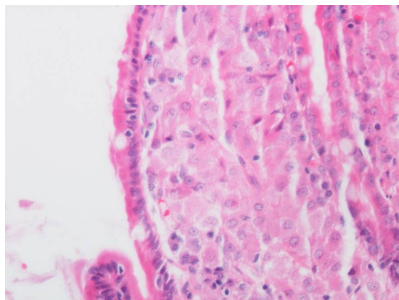
Case 4

- A 45-year-old man is being evaluated for diarrhea and weight loss. Upper gastrointestinal endoscopy shows the duodenum is abnormal. Biopsy specimens are examined with hematoxylin & eosin stain and with acid-fast stain.

Endoscopic photo

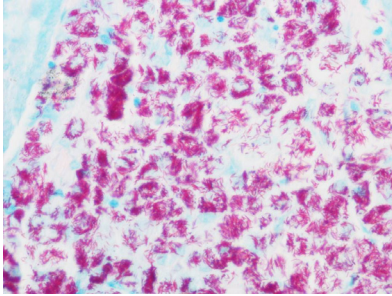


Histological photo (H&E)



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Acid-fast stain



Question 4

- The diagnosis is:
 - A. Lymphangiectasia
 - B. Tuberculosis (*Mycobacterium tuberculosis*)
 - C. *Mycobacterium avium* complex
 - D. Whipple's disease
 - E. Mineral oil ingestion

Case 5

- A 60-year-old woman presents for evaluation of chronic diarrhea and weight loss. She has had loose stools and excessive flatus for 12 months. During that time her weight has decreased from 110 pounds to 90 pounds (height 64 inches). Diarrhea mainly occurs after meals, but sometimes wakes her from sleep. Stools are malodorous and are of varying consistency, but rarely formed. She occasionally notes oil on the surface of the water in the commode. There is no blood in the stool. Twenty years ago she had a vagotomy and antrectomy for a bleeding prepyloric ulcer. She had intermittent heartburn and was taking omeprazole for suspected reflux disease. She did not have diabetes, heart, or liver disease.

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Case 5

- Physical examination showed a thin elderly woman in no distress. Abdomen was slightly distended and the percussion note was tympanitic. Bowel sounds were active. Anal sphincter tone was reduced and squeeze was weak. Stool was brown and fecal occult blood test was negative.
- Laboratory tests revealed: hemoglobin 10.5 g/dL, MCV 105 fL, total protein 5.5 g/dL, albumin 2.6 g/dL, serum vitamin B₁₂ level 90 pmol/L, and serum folate 20 ng/mL.

Question 5

Her diarrhea is most likely due to:

- A. Chronic pancreatitis
- B. Post-vagotomy dumping syndrome
- C. Superior mesenteric artery syndrome
- D. Small bowel bacterial overgrowth
- E. Vitamin B₁₂ deficiency
