1. A
The patient has Peutz-Jeghers (PJ) syndrome, characterized by an STK11 mutation and the classic findings seen on the oral mucosa. Patients with PJ are at high risk for gastrointestinal tract, breast, testicular, and pancreatic malignancies. Answer A is correct — colonoscopy and EGD should be performed beginning at age 8. Capsule endoscopy should also be started at age 8. Males need testicular screening, but it should begin at birth. Breast MRI should begin at age 25.
Reference:

2. C
HCV treatment should be offered to every patient. However, patients with extra-hepatic manifestations such as cryoglobulinemia should be treated with relative urgency as the disease can lead to kidney failure and more complex management (even in the face of a mild biopsy). This patient’s rash demonstrates leukocytoclastic vasculitis consistent with cryoglobulinemia. In these days of indirect measurements of fibrosis and highly effective treatment, repeated biopsied and prolonged “warehousing” for better and simpler treatment is no longer warranted.
Reference:

3. B
This case represents systemic mastocytosis with colonic involvement. The accepted treatment involves stopping the release of mast cells. Vedolizumab and infliximab are indicated for either ulcerative colitis or Crohn's disease, and the clinical presentation, description and images of the colonoscopy, and histology is much more consistent with mastocytosis.
References:

4. B
The biopsy shows lymphocytic colitis, with intraepithelial lymphocytosis (particularly in the crypts) and increased inflammatory cells in the lamina propria. Collagenous colitis may have a similar appearance, but must also have a thickened subepithelial collagen layer. The crypt architecture is preserved, essentially ruling out ulcerative colitis, and there is no excess of eosinophils to suggest a diagnosis of eosinophilic colitis. Irritable bowel syndrome would have a normal colon biopsy.
References:

5. C
In a young patient with a diarrheal syndrome and recurrent upper respiratory infections, the diagnosis of common variable immunodeficiency (CVID) should be entertained. The small bowel biopsies show suggestive changes, with villous atrophy, intraepithelial lymphocytosis and absence or paucity of plasma cells in the lamina propria. To help make the diagnosis, serum immunoglobulin levels should be checked, and patients will typically be low in IgG, IgM, and IgA levels. Repeat immunoglobulin levels should be performed to ensure that the baseline levels were not falsely lowered due to concurrent illness and to establish that the patient has persistently low levels. Although this patient has permisive HLA haplotyping for celiac disease, her negative IgA anti-TTG makes celiac disease less likely; anywhere from 30-40% of patients may have permisive celiac gene pairs (HLA DQ2/DQ8), so a positive result is not indicative of disease. Her IgA anti-gliadin antibody positivity is likely a false positive test, and the low sensitivity and specificity of that serologic test has led to the recommendation that it should not be used in clinical practice for adult patients being evaluated for celiac disease. Although the endomysial antibody serology performs better than traditional gliadin antibodies, additional testing for celiac disease does not address the histologic finding where plasma cells are absent. While non-steroidal anti-inflammatory drugs (NSAIDs) can cause intraepithelial lymphocytosis, it would be unusual to see villous atrophy and NSAID enteropathy would not explain the clinical scenario. Screening for human immunodeficiency virus (HIV) would be recommended for all sexually active adults, or anyone with an AIDS-defining illness, but there is nothing in her biopsy to suggest such a finding. Thus, the correct answer is to check immunoglobulin levels.
6. C
The endoscopic photo demonstrates an island of Barrett’s with nodularity. Radiofrequency ablation for such a lesion is inappropriate, as the tissue damage may be too superficial to obliterate the lesion. Therefore, the lesion should be removed prior to ablative therapy. Given the nodularity present, this is a high-risk lesion, making repeat endoscopic surveillance a poor choice in a young individual. Response rates with endoscopic mucosal resection followed by ablation are quite high in this situation, and esophagectomy can generally be avoided.

References:

7. C
De novo Crohn’s disease (CD) of the pouch can occur in pouch patients with a pre-operative diagnosis of UC. The purported risk factors include smoking and the presence of family history of CD. One of the clinical presentations of CD of the pouch is the presence of PVF. On the other hand, PVF is a common complication after pouch surgery. There are 3 common causes for PVF: 1) iatrogenic, mainly from the trapped posterior wall of the vagina in between the staple heads during the staple anastomosis; 2) CD of the pouch; and 3) cryptogenic abscess or fistula. Differential diagnosis of the causes of PVF can be difficult. The clinical presentation of iatrogenic PVF typically occurs within 6-12 months after pouch surgery and a careful pouch endoscopy examination may detect the fistula opening at the anastomosis. One of the features of cryptoglandular fistula or abscess is the presence of fistula opening at the dentate line. The surrounding mucosa around the internal opening of PVF from iatrogenic injury or cryptoglandular source is frequently normal. In this case, PVF was presented more than 1 year after the pouch surgery and the fistula opening was at the middle anal canal with inflamed mucosa around, suggesting the diagnosis of CD of the pouch. CD of the pouch may have non-caseating, non-mucinuous granulomas.

References:

8. A
Colon ischemia (CI) affecting the right colon in an isolated fashion (IRCI) has a different clinical presentation and worse outcome than CI affecting any other region of colon. Patients with IRCI present less frequently with bright red blood per rectum or bloody diarrhea, and more frequently present with abdominal pain unaccompanied by rectal bleeding. Patients with IRCI more frequently suffer from atrial fibrillation, coronary artery disease, and chronic kidney disease than do patients with CI affecting other areas of the colon. Patients with IRCI have worse outcomes for 30-day mortality, greater need for surgical intervention, and unfavorable outcomes compared to patients with non-IRCI. These findings were reconfirmed in a recent study of patients with pathologically confirmed CI, which found a 30-day mortality rate of 20.3% for IRCI compared with 9.0% in those with non-IRCI (P<0.01). It is currently recommended that a noninvasive vascular imaging study be performed for all patients with IRCI. First-line treatment of uncomplicated disease is supportive care with IV fluid.

CI is usually non-occlusive in nature, but CT (or CTA) can be used to identify whether or not vascular occlusions are present. Unfortunately, the IMA is occluded in up to 10% of asymptomatic patients over 60 years of age, and hence the significance of such a finding is uncertain. With emerging technology, contrast-enhanced CT can sometimes assess patency of the celiac, SMA, and IMA without devoted CTA; this usually requires direct communication with the radiology team to review the imaging specifically with the goal of vascular assessment. Data do not exist on the sensitivity and specificity of CT for assessing vascular occlusion in CI, but a meta-analysis including 3 prospective and 3 retrospective studies that evaluated CT for the diagnosis of mesenteric arterial embolism, mesenteric arterial thrombosis, and mesenteric venous thrombosis (i.e., primary vascular AMI) found the sensitivity and specificity to be 93.3% and 95.9%, respectively.

Reference:

9. D
This patient most likely has autoimmune enteropathy (AIE), a rare disease consisting of chronic diarrhea, villous atrophy, and other characteristic histologic findings, and often the presence of autoantibodies. While AIE may present similarly to CD and shares the presence of villous atrophy, CD antibodies are negative in this case, making CD unlikely. Other histologic features of AIE include reduced or absent paneth and goblet cells, crypt apoptosis, and lymphocyte infiltration at the base of the crypts (versus surface lymphocytosis seen with CD). Anti-enterocyte and anti-goblet cell antibodies support the diagnosis. However, AIE may be made in the absence of antibodies, and antibodies may be present in patients with other autoimmune disorders. AIE may present in childhood or adulthood.
Extra-intestinal manifestations involving many organ systems are possible, and some with AIE have systemic autoimmune disorders including immunodysregulation polyendocrinopathy enteropathy X-linked syndrome (IPEX) or autoimmune phenomena, polyendocrinopathy, candidiasis, and ectodermal dystrophy (APECED). Common variable immunoglobulin deficiency must be excluded, as it can mimic the clinical and histologic presentation AIE. A negative TTG IgA with a normal serum IgA level, failure to respond to a gluten-free diet, and the histologic features of AIE make CD unlikely. Therefore, checking HLA status or reviewing the slides for a clonal population for refractory CD is unlikely to help. While the histology of small bowel Crohn’s may be similar to CD, the picture is much more consistent with AIE.

References:

10. C

Gastric polyps should routinely be evaluated by biopsy or polypectomy, as their histology cannot be reliably determined endoscopically. In the presence of multiple polyps, biopsy or polypectomy of the largest polyp and representative lesions should be performed. Hyperplastic gastric polyps are associated with an increased risk of cancer. As such, large hyperplastic polyps should be excised. In the presence of multiple hyperplastic or adenomatous gastric polyps, the surrounding non-polypoid mucosa should be biopsied to evaluate for *H. pylori* infection and metaplastic atrophic gastritis.

Reference:

11. D

This patient has primary sclerosing cholangitis (PSC), a chronic idiopathic cholestatic liver and biliary tract disease. Cholangiogram findings include focal stricturing and saccular bile duct dilation of the intra- and extra-hepatic bile ducts. Patients with PSC should be evaluated for elevation of serum immunoglobulin G4 (IgG4), which has been found in approximately 10% of patients with PSC and may represent a subset who benefit from corticosteroids. MRCP is preferred over ERCP to establish a diagnosis of PSC, and ERCP is not indicated in the absence of a dominant stricture, pruritus, or cholangitis. Routine liver biopsy is not necessary in patients with classic cholangiogram findings of large-duct PSC, but does have a role in diagnosing small-duct PSC when MRCP is normal. Ursodeoxycholic acid is not proven to be beneficial for PSC, and doses exceeding 28 mg/kg/day may increase the risk for adverse outcomes, including an elevated risk for colonic neoplasia in those with PSC and ulcerative colitis.

Reference:

12. C

The correct answer is (C) discontinue infliximab and initiate vedolizumab. This patient has active Crohn’s disease despite combination therapy with infliximab and azathioprine and high infliximab trough levels. The range of optimal infliximab trough level is between 3-7 mcg/mL. Since the levels of infliximab were high, the next best step is to switch to a biologic agent with a different mechanism of action, such as the anti-integrin drug vedolizumab. Increasing the frequency of infliximab dosing is incorrect here, as the patient is not responding despite supra-therapeutic levels of infliximab. Switching to adalimumab is incorrect, as it has the same mechanism of action as infliximab. If the patient has infliximab antibodies, then switching to adalimumab would be the best approach. Discontinuing azathioprine and initiating methotrexate is incorrect, as the patient has evidence of active inflammation despite combination therapy. A change in immunomodulator alone is unlikely to induce mucosal healing. In addition, methotrexate is not an ideal option in a young woman in her childbearing years due to risk of teratogenicity.

References:
2. AGA Institute Guidelines for the Identification, Assessment and Initial Medical Treatment in Crohn’s Disease: Clinical Care Pathway. Http://campaigns.gastro.org/algorithms/IBDCarePathway/

13. C

All novel oral anticoagulants (NOACs) are excreted, to some degree, by the kidneys; the amount of renal excretion varies with each NOAC. Impaired renal function, as estimated by the creatinine clearance (CrCl), is an important risk factor to note and accommodate when planning discontinuation of the NOAC prior to a high-risk endoscopic procedure. Renal clearance of apixaban is 40-50%, and this patient has a moderately impaired creatinine clearance (30-59 mL/min). Thus, the required timing of discontinuation before the EMR is 3 days. If the patient had a normal creatinine clearance (>60 mL/min), discontinuing apixaban for 1-2 days would be appropriate. Discontinuation of the drug for 4 days prior to the EMR would only be necessary if the patient had severely impaired renal excretion (CrCl of 15-29 mL/min).

References:
The patient’s manometry demonstrates type III achalasia (elevated median IRP, premature/spastic contractions with at least 20% of swallows). Treatment options for achalasia include Heller myotomy, pneumatic dilation, per-oral endoscopic myotomy, and onabotulinum toxin injection into the LES. As he is 35 years old without comorbidities, onabotulinum toxin injection would not be recommended. Recent evidence suggests that Heller myotomy is more effective than pneumatic dilation, in the setting of type III achalasia.

References:

The photo demonstrates a gastrointestinal angiodysplastic lesion (GIAD) of the small bowel. In the U.S. and Europe, small bowel GIADs are detected in approximately 30-40% of patients presenting with obscure GI bleeding. The prevalence of these lesions is increased in subjects over the age of 60, and in the setting of certain predisposing conditions including chronic kidney disease, aortic stenosis, and von-Willebrand’s disease. Over 50% of patients may have more than one lesion detected. Long-term outcome studies have demonstrated that the spontaneous cessation rate of bleeding in patients found to have GIAD, in particular patients with 1-2 isolated lesions, can approach 40-50% without therapy. After endoscopic therapy for GIAD, re-bleeding rates remain elevated at 20-25% in studies with long-term follow-up post-enteroscopy. Without therapy, re-bleeding rates for GIAD approach 50% during the subsequent year following capsule endoscopy. The use of hormonal therapy has not been demonstrated to be effective for GIAD compared to placebo therapy.

References:

Several clinical and endoscopic features point out that this is not the classic presentation of microbiota or bacteria-associated pouchitis. For example, there was diffuse enteritis in addition to diffuse pouchitis, and the patient did not respond to antibiotic therapy. Crohn’s disease (CD) of the pouch typically presents with segmental inflammation of the pouch and/or small bowel, often associated with strictures or even fistula. In fact, PSC is a protective factor for pouch patients from developing CD of the pouch. Ischemic pouchitis would present with an asymmetric distribution of pouch inflammation. This patient had PSC and diffuse inflammation of the pouch and distal small bowel, and poor response to antibiotic therapy, suggesting a diagnosis of PSC-associated pouchitis/enteritis. The first line treatment includes oral budesonide.

References:

Surgery is recommended for patients with complicated diverticulitis who fail medical management including percutaneous drainage. Emergency surgery is not recommended for clinically stable patients, even those with a large abscess. Instead, medical therapy should be used to resolve the acute episode. Small abscesses (<4 cm) often resolve on their own with antibiotic therapy, but larger abscesses, especially those that do not resolve with antibiotics, can be managed with percutaneous drainage. Elective surgery after recovery is generally recommended for patients with a large abscess (≥5 cm) or a pelvic abscess regardless of whether it was drained percutaneously. This is based on studies that suggest the recurrence rate is high in these patients. Laparoscopic lavage has been used to manage certain patients with perforated diverticulitis but not for treatment of a contained abscess.

References:

The patient’s esophageal manometry demonstrates 100% failed peristalsis and incomplete relaxation of the lower esophageal sphincter (LES), the hallmarks of achalasia. There are 3 types of achalasia described. Type I involves complete absence of peristalsis. In type II achalasia, pan-esophageal pressurization is noted in at least 20% of swallows. Type III achalasia, also known as spastic or vigorous achalasia, premature (spastic) contractions are seen in at least 20% of swallows. In this figure, pan-esophageal pressurization is noted and therefore consistent with type II achalasia. With esophagogastric junction outflow obstruction, peristalsis is typically preserved; however, patients have incomplete relaxation of the LES.
This is a type I choleodochal cyst, which is a fusiform dilation of the extrahepatic bile duct. It is unclear if it is symptomatic, as the biliary pancreatitis may be from microlithiasis originating from the gallbladder or from the choledochal cyst. Type I choleodochal cysts (symptomatic or incidental) should be considered for surgical excision with Roux-en-Y hepaticojejunostomy reconstruction because of the elevated rate of biliary malignancy arising within the cyst. The lifetime risk for biliary cancer in patients with choledochal cysts is estimated at 10-30% and relative risk is 20-30 fold compared with the general population.

References:

Anal cancer is relatively rare (estimated to be less than 2.5% of all GI cancers), but the incidence is increasing in both men and women. This is due, at least in part, to infection with the human papilloma virus (HPV). The majority of cases present with early stage localized disease.

Anorectal bleeding is the most common presenting symptom of anal cancer, occurring in 45% of patients. Anorectal pain and fullness are present in 30% of patients. Additional symptoms include a change in bowel movements and a sensation of incomplete evacuation. Around 20% of patients present with no symptoms. The diagnosis of anal cancer is often delayed because anorectal bleeding is initially attributed to hemorrhoids.

HPV is the most common sexually transmitted virus that affects the genital tract of males and females. Although the virus is cleared in most people, about 1% develop genital warts. HPV-16 is the type most commonly associated with cancer, including anal cancer. Only a small minority of anal cancers are HPV-negative. The relationship between HIV and anal cancer is less clear. A recent meta-analysis concluded that HPV-16 is the causative agent in anal cancer, and that the higher rate of anal cancer in HIV + men who have sex with men is due to higher rates of HPV infection.

References:

When mesenteric panniculitis (MP) is ultimately diagnosed, the major symptom at presentation is pain, which is seen in 54.3% of patients, and may include low back pain, abdominal pain, and flank pain. Other common symptoms include weight loss and nausea with or without vomiting. Elevated inflammatory markers, such as an erythrocyte sedimentation rate and c-reactive protein, are seen in 42 and 52% of patients, respectively.

On CT scan, mesenteric panniculitis appears as a mass-like area of heterogeneously increased fat attenuation that may displace local bowel loops, but typically does not displace the surrounding mesenteric vascular structures. Mesenteric lymph nodes are often seen within the region of segmental mesenteric stranding and nodes may be greater than 1 cm in some cases. Lymph nodes greater than 1.2 cm together with the absence of the fat ring sign (halo of fat surrounding mesenteric vessels) are predictors of a diagnosis of malignancy in patients with MP.

Patients with HP not only have a higher prevalence of associated malignancies, but also have a greater chance of developing a malignancy at a 5-year follow-up compared to controls. In most cases, tumors are discovered before the diagnosis of MP. They include carcinomas (breast, colorectal, gynecological, renal and gastric as well as prostate) and hematological
malignancies (non-Hodgkins lymphomas and plasma cell tumors). The time period during which a new malignancy was discovered ranged from 7 months to 3 years.

Mesenteric panniculitis is a fibroinflammatory process. It can regress spontaneously, run a stationary course, or progress to varying degrees of fibrosis. The disease is generally believed to be benign in the majority of cases, but needs to be followed given the increased association with malignancy. In the setting of progressive fibroinflammatory disease, a combination of prednisone and tamoxifen has been found to demonstrate improvement.

References:

22. D
The patient has transfusion-dependent anemia secondary to GAVE. Placement of a TIPS would be appropriate for gastrointestinal blood loss due to conditions that are a direct result of portal hypertension (e.g. gastropathy or varices). However, GAVE is not a direct sequela of portal hypertension and thus responds poorly to measures that decrease portal pressures. Further treatment with APC would not be appropriate. The best option would be endoscopic therapy with RFA.

GAVE, or watermelon stomach, is an uncommon cause of UGI bleeding that can often be confused with portal hypertensive gastropathy (PHG), particularly because GAVE has been associated with cirrhosis. Classically, GAVE has an endoscopic appearance characterized by erythematous stripes radiating out from the pylorus to the antrum. However, this appearance is not always encountered, and GAVE may be confused endoscopically with PHG or gastritis. Moreover, patients with both GAVE and cirrhosis tends to have smaller, well-defined vascular ectatic lesions in the antrum, rather than the characteristic watermelon stripes as seen in this patient. GAVE may also affect other areas of the stomach, such as the gastric cardia.

Endoscopic biopsy may assist in differentiating GAVE from other etiologies such as PHG, particularly when fibrin thrombi are seen within dilated capillaries. Most cases of GAVE are idiopathic, although there are associations with cirrhosis and systemic sclerosis. GAVE occurs more often in elderly woman (>70 years), and the typical clinical presentation is that of chronic GI bleeding, iron-deficiency anemia, and hemoccult positive stool. Bleeding secondary to GAVE is most effectively treated by the endoscopic application of thermal therapy using thermal or bipolar probe, argon plasma coagulation, or laser, and often requires several sessions. RFA has been demonstrated to be effective in APC-refractory patients in a prospective cohort study. Eighty-six percent of patients who remained transfusion dependent after APC had success with a mean of 2 ablation sessions using RFA, with no further need for transfusion out to 6 months.

References:

23. C
The photo represents typical endoscopic findings in gastric antral vascular ectasia (GAVE). While more common in cirrhosis patients, especially due to NAFLD, it is not a direct result of portal hypertension and therefore, non-selective beta-blockers and TIPS would not be expected to improve this condition. The disorder is not directly related to Helicobacter pylori infection. GAVE is also not responsive to PPI. While liver transplantation has been shown to improve this disorder, it is not an indication for transplantation alone and certainly is not a first-line therapy. The best therapy at reducing the need for transfusions is local endoscopic treatment such as APC.

Reference:

24. B
This patient with collagenous colitis did not respond to appropriate doses of loperamide or bismuth subsalicylate. In a recent controlled trial, mesalamine was no better than placebo. Budesonide was shown to be effective in collagenous colitis in several placebo-controlled trials. Prednisone is less well-studied and its side effects are greater than those of budesonide. Azathioprine may be used for steroid-dependent or steroid-refractory collagenous colitis, but it would be premature in this patient, who has not been treated with budesonide.

References:
25. D
The patient in question has a diagnosis of achalasia. His symptoms of dysphagia to solids and liquids are consistent with the diagnosis, which is confirmed on the timed esophagram, revealing a dilated esophagus with the classic "bird's beak" appearance, as well as the manometry study, which reveals loss of esophageal body motility and lack of lower esophageal sphincter (LES) relaxation. In the normal condition, peristalsis pushes food through the esophagus with relaxation of the LES. These muscular effects are due to that both excitatory and inhibitory input from the enteric neural plexus and extrinsic innervation of the vagus nerve. Achalasia results from a disruption of these normal functions. Surgical specimens from patients with achalasia reveal degeneration of ganglion cells in the myenteric plexus of the esophageal body and LES of these patients, potentially due to inflammatory cell-induced destruction. The resultant plexopathy disrupts peristalsis, and through preferential loss of the inhibitory neurotransmitter releasing nitric oxide-releasing ganglion cells in the LES, results in a lack of relaxation of the LES. This results in LES hypertonicity and resultant dysphagia. While achalasia can result from Chagas disease and after infection with Trypanosoma cruzi, this patient has not traveled out of the country and does not have other features of diffuse enteric myenteric destruction, including megacolon, heart disease, and neurologic disorders, often seen in these patients. He does not have scleroderma and therefore would not be expected to also have calcinosis, Raynaud's or other features of CREST syndrome. Treatment of this patient can be with either pneumatic dilation or Heller myotomy. Both are preferable to surgical resection or botulinum toxin injection as first-line modalities.

Reference:

26. D
The tracing demonstrates type III achalasia (spastic achalasia). There is incomplete relaxation of the lower esophageal sphincter and a premature (spastic) contraction in the body of the esophagus. Type III achalasia responds best to a myotomy, which is most likely to offer long-term relief of symptoms. Although the remaining treatments are all options for the management of achalasia, they are less effective than surgical myotomy for type III achalasia. Pneumatic dilation performed up to 3 times is effective in a subset of patients, particularly those with type II achalasia. In 1 randomized controlled trial comparing pneumatic dilation to Heller myotomy, both were equally efficacious when a graded approach of up to 3 dilations was performed. However, another study demonstrated that the predictors of success for pneumatic dilation included female sex, age >45 years, and type II achalasia. In a young male with type III achalasia, a myotomy is considered the optimal treatment.

References:

27. C
This patient is experiencing her first flare of ulcerative colitis. While it is likely that the pregnancy may have triggered the flare, it is not necessary to terminate the pregnancy and not necessary to perform a colectomy without first trying medical therapy. While infliximab and vedolizumab are good options for moderate to severe ulcerative colitis and compatible with use in pregnancy, this patient has moderate symptoms and may well respond to mesalamine therapy, which can be tried first. However, time is of the essence and if she does not have an adequate response, steroids as a bridge to other therapy or a biologic should be considered.

Reference:

28. B
The patient appears to have type II autoimmune pancreatitis. Autoimmune pancreatitis (AIP) represents a unique subset of chronic inflammatory pancreatic disease with distinct clinical, morphologic and histopathologic features that typically responds dramatically to steroid treatment. The key to the correct answer is the pancreatic duct stricture. Patients with type II AIP, also termed idiopathic duct centric chronic pancreatitis, do not have elevations in the IgG4 level. This condition usually presents in younger patients and is strongly associated with inflammatory bowel disease. High-dose prednisone should result in a resolution of the pancreatic inflammation and the associated stricture. Answer A is incorrect—pancreatic duct stenting will not definitively control the stricture. Answer C is incorrect—azathioprine should not be used as first line treatment for AIP. However, there may be a role for immunomodulating drugs as chronic suppressive therapy in AIP relapse. Answer D is incorrect—surgical resection of the stricture would not be indicated as the patient has AIP.

Reference:
29. B
The pathognomonic finding of obliterator phlebitis is seen in IgG4-related type I autoimmune pancreatitis, which also features a dense lymphoplasmacytic infiltrate. Answer A is incorrect – type II AIP features classically the granulocyte epithelial lesion or GEL. Answer C is incorrect – the image is not consistent with adenocarcinoma. Answer D is incorrect – the classic histologic finding in serous cystadenoma is a glycogen-rich cell layer.

Reference:

30. C
When fundic gland polyps are found in large quantity (≥20) in a young patient (<40 years of age), it is important to consider familial adenomatous polyposis syndrome. Although proton pump inhibitors can be associated with fundic gland polyposis, the number of polyps seen is usually fewer and the patients are usually older. The presence of polyps in the antrum and the family history of colorectal cancer should also alert the clinician to a possible familial adenomatous polyposis syndrome. Colonoscopy and genetic testing should be considered. Annual surveillance of the lesions is not recommended and removal of lesions >1 cm in size is recommended to exclude dysplastic or malignant cells.

References:

31. C
The patient’s manometry reveals a poorly relaxing EGJ with an integrated relaxation pressure (IRP) of 25 mmHg and a pattern of peristalsis consistent with spasm. Thus, the patient would fulfill Chicago Classification for type III achalasia. The esophageal body has premature contractions associated with a reduced latency interval supporting a spastic contraction. If the latency interval were normal, the patient would be classified as having an EGJ outflow obstruction, as this diagnosis is dependent on the presence of propagating peristalsis without meeting criteria for spasm. Type I and II achalasia require complete absence of peristalsis with the presence of panesophageal pressurization being the criteria that separates Type II for Type I achalasia.

References:

32. B
Although pneumatic dilation and Heller myotomy with Dor fundoplication are reasonable options for definitive therapy for achalasia, they would only address the EGJ and not address the spastic contractions. Recently, data has been accumulating that patients with type III achalasia have better outcomes with a tailored POEM that performs a long myotomy along the entire length of the esophagus that is involved in the spastic contraction. Botulinum is not a definitive treatment and should not be considered for this young patient.

Reference:

33. C
According to the recent recommendations by the USMTF (see below), a repeat exam should be performed within 1 year if the preparation is not adequate to visualize polyps larger than 5 mm.

“If the colonoscopy is complete to cecum, and the preparation ultimately is deemed inadequate, then the examination should be repeated, generally with a more aggressive preparation regimen, within 1 year; intervals shorter than 1 year are indicated when advanced neoplasia is detected and there is inadequate preparation (strong recommendation, low-quality evidence).”

Reference:

34. C
Unlike hyperplastic colon polyps, hyperplastic polyps of the stomach can harbor dysplasia and malignancy. They are often found incidentally and can be multifocal within the stomach. Size greater than 1 cm and penduculated morphology have been found to be risk factors for dysplasia and malignant transformation. Because of this, it is recommended that hyperplastic gastric polyps larger than 1 cm be removed endoscopically. Hyperplastic polyps can develop in the setting of H. pylori infection, but no H. pylori has been identified in this patient. Antrectomy is not indicated in this patient, as the polyps are removable endoscopically and there is no evidence of malignancy at this time.

References:
35. C
Based on a small prospective study that used high-definition colonoscopy, dysplasia was identified in more patients undergoing chromoendoscopy than white-light colonoscopy alone. Two randomized studies comparing narrow-band imaging to high-definition white light did not suggest that a benefit for narrow-band imaging. Insufflation, sample biopsies, and water immersion were not studied.

References:

36. D
Indications for hepatitis B treatment in general include HBV DNA >20,000 IU/L in hepatitis e antigen-positive patients, elevated ALT, and ongoing inflammation on liver biopsy. The patient has all 3 of these indications and, in addition, he is hepatitis B genotype A. He is interested in pursuing therapy with a finite duration. The oral therapies (lamivudine, entecavir, telbivudine, and tenofovir) generally require long-term, and often, life-long treatment. Pegylated interferon is used for 48 weeks in hepatitis B. Therefore the best answer is D. Using pegylated interferon, hepatitis B e antigen loss occurs in 47% of patients with genotype A hepatitis B and surface antigen loss approaches 10%. No additional benefit was seen when adding lamivudine to pegylated interferon.

References:

37. B
The patient has functional heartburn, as evidenced by normal pH testing while off PPI, and negative correlation of reflux to symptoms. Functional heartburn may be related to visceral hypersensitivity, esophageal dysmotility, hypervigilance, or psychiatric disease. Treatment revolves around patient reassurance and modulation of pain perception. Low-dose tricyclic antidepressants have been shown to improve global symptoms in patients with functional heartburn.

References:

38. B
Because the cyst was not present on the initial scan, it is unlikely to be a mucinous cystic neoplasm. It is important to use proper terminology for fluid collections in acute pancreatitis because management differs based on the type of collection. The revised Atlanta criteria define fluid collection nomenclature based on time from symptom onset, whether they occur in interstitial or necrotizing pancreatitis, and the presence of solid component. In this case, the most likely diagnosis is walled-off pancreatic necrosis (WOPN) since the collection originated in a region of pancreatic necrosis and is observed >4 weeks after symptom onset. The presence of increasing pain and fever may certainly indicate infection of the necrotic collection. Once other sources of infection have been ruled out, an intervention to drain and debride the collection will likely be indicated. However, open necrosectomy is no longer the first-line intervention for infected WOPN. Endoscopic drainage and debridement would be an appropriate intervention to control the infection and delay or obviate surgical debridement.

Reference:

39. D
This patient has Whipple’s disease, and the histology slide reveals villous atrophy and PAS-positive macrophages in the lamina propria of the duodenum. The history also reveals some cardinal features of this disease, including a history of migratory polyarthropathy, diarrhea, weight loss, and the prior fever of unknown origin due to pericarditis. T. whipplei is one of the most common causes of culture-negative endocarditis and can be detected in up to 6.3% of such patients. It is also common for patients to present with migratory arthralgias of the large joints (67%) for as long as 6 years prior to definitive diagnoses. The differential diagnosis of this disorder includes hyperthyroidism, connective tissue disease, celiac disease, small intestinal bacterial overgrowth, inflammatory bowel disease, and AIDS-related diarrhea.

References:

40. C
Based on the most current U.S. Multi-Society Task Force on Colorectal Cancer Guidelines for Colonoscopy Surveillance after Screening and Polypectomy, published in 2012, following resection of an advanced adenoma colonoscopy should be repeated.
in 3 years. An advanced adenoma is defined as having at least one of the following: size ≥10 mm, villous component, or high-grade dysplasia. The NCI Pooling Project pooled data from 8 prospective studies comprising 9,167 men and women aged 22 to 80 with previously resected colorectal adenomas. After a median surveillance follow-up of 4 years, about 1 in 10 patients was diagnosed with an advanced neoplasm and approximately 1 in 150 was diagnosed with colorectal cancer. Risk factors at the time of index colonoscopy placing the patient at risk for subsequent advanced neoplasia/cancer include number, size, location, and histological features of adenomas, as well as age and sex of patient. Among these factors, age, adenoma size, and adenoma number had the strongest association with future risk.

References:

41. D
The correct answer is (D), colonoscopy with surveillance biopsies. The patient's MRCP shows multiple areas of intrahepatic stricturing with associated dilation consistent with primary sclerosing cholangitis (PSC). The risk of colorectal cancer is up to 4-5 times higher with underlying PSC. Therefore, it's recommended to start annual colorectal cancer surveillance at the time of PSC diagnosis. ERCP is not indicated here as the patient does not have symptoms of bacterial cholangitis. Endoscopic ultrasound has no role in PSC in the absence of a mass suspicious for cholangiocarcinoma. Ursodeoxycholic acid at higher doses (28-30 mg/kg) has been associated with increased risk of colonic malignancy in PSC patients with ulcerative colitis and should be avoided.

Reference:

42. A
This is a benign juvenile polyp. The histology shows a characteristic cystic architecture with mucus-filled glands, prominent lamina propria, and a dense infiltration with inflammatory cells. These have been called retention polyps in the past. They are the most common childhood colonic polyp, typically occurring in patients <10 years of age but can be diagnosed in adulthood, typically after an episode of painless bleeding. They are usually sporadic and not associated with juvenile polyposis syndrome. They are not neoplastic but may be associated with dysplasia. If completely removed, endoscopic surveillance is not necessary.

Juvenile polyposis syndrome (JPS) is an autosomal dominant (with incomplete penetrance) colon cancer syndrome that should be suspected when there are multiple (> 5) juvenile polyps in the colon, juvenile polyps outside the colon, or a family history of JPS. JPS is a hamartomatous polypsis syndrome. Histology of JPS polyps is similar to isolated juvenile polyps but adenomatous features may also be present. Family studies suggest up to a 50% risk of GI cancer (colon, duodenum, stomach, and pancreas being most common), which can present at an early age (mean age 30s). Genetic mutations are identified in 40-60% and include BMPR1A, DPC4, and SMAD4, a transforming GF-ß intracellular signaling molecule. Surveillance should be performed with upper endoscopy (EGD) and colonoscopy. EGD is recommended every 2 years beginning at age 15, and colonoscopy every 3 years beginning at the onset of symptoms or in the early teen years for those without symptoms and a positive family history.

Reference:

43. D
This patient has a serologically negative form of enteropathy (villous atrophy, inflammation). While some patients with celiac disease may have negative celiac serologies, this clinical scenario should prompt a careful review of other causes of enteropathy that can mimic celiac disease, especially in the absence of permissive celiac haplotyping. In 2013, the Food and Drug Administration warned about an association between the anti-hypertension agent olmesartan and a drug-induced enteropathy, which can mimic celiac disease, both clinically and histologically. Patients with olmesartan-related enteropathy are typically older at presentation, with average age of approximately 70 years, and are often referred for “refractory celiac disease.” Diarrhea and weight loss are universal, and nausea, vomiting, and bloating are also common. For most patients, the medication may have been initiated months to years earlier, often leading to a delay in diagnosis. The histology noted in patients with olmesartan-related enteropathy can be very similar to that seen in celiac disease, with villous atrophy and increased intraepithelial lymphocytes, but acute inflammation may be seen in patients with olmesartan-induced enteropathy, which is less commonly seen with celiac disease, where chronic inflammatory changes are hallmark. Stopping the medication should result in improvement in symptoms.

References:

44. E
This patient has epigastric pain, iron-deficiency anemia, gastric erosions, and duodenal intraepithelial lymphocytosis (IELs) without villous atrophy, all of which could be explained by use of over-the-counter NSAIDs for her headaches and menstrual pain. Although duodenal IELs could be seen in very early celiac disease, NSAID use is a well-described cause of this histologic finding, and is more likely in the current clinical setting (epigastric pain and gastric erosions). The use of NSAIDs has been reported in 8-21% in those with isolated duodenal lymphocytosis. Lymphoma would be unlikely, especially without weight loss, other constitutional symptoms, risks factors for the disease, or more dense infiltration by lymphocytes in the biopsy specimen, where the lymphocytes appear to be intraepithelial in nature. Endometriosis can involve the intestinal tract, but is more commonly found in the rectosigmoid region, leading to constipation, obstruction, and hematochezia. Further, the endoscopic findings and histology would reveal endometrial tissue. A diagnosis of functional dyspepsia should not be used in this case, where both iron-deficiency anemia and gastric erosive disease is noted. Celiac disease is less likely because of the negative anti-IgA TTG antibodies, though this is only 95% sensitive for the diagnosis.

References:

45. D
This patient has collagenous sprue, a rare disease of the small intestine that is hallmarked by diarrhea, weight loss, and features of malabsorption. Although celiac disease and collagenous sprue are thought to be closely linked, the precise association is not clear. In those with collagenous sprue, the small bowel histology is characterized by villous atrophy and excessive subepithelial collagen deposition, which may ultimately replace crypt structure. The mucosal layer is often thinned, and the lamina propria is filled with chronic inflammatory cells. Although not uniformly responsive to gluten elimination, it is often the first step in management while considering immunosuppressive therapies. Total parenteral nutrition may be needed. Although the patient has allergies, her histologic findings do not suggest a dense eosinophilic infiltrate as would be expected in eosinophilic gastroenteritis. Celiac disease would not have this degree of collagen deposition, and autoimmune enteropathy would typically reveal a paucity of goblet cells. The collagen deposition should not be mistaken for amyloid deposition, but if the latter is a consideration, Congo red staining and immunofluorescence can be helpful to diagnose the condition.

Reference:

46. B
In a patient with celiac disease who has recurrence of symptoms after initially being controlled, gluten ingestion (blatant or inadvertent) needs to be considered, given it is the most common cause of recurrent symptoms. Any change in social situation (such as her recent job change) can lead to patients being exposed to gluten in ways that they had previously controlled. Her current small bowel biopsies show villous atrophy, crypt hyperplasia, intraepithelial lymphocytosis and a chronic inflammatory infiltrate in the lamina propria. Her diet needs to be carefully reviewed for cross-contamination, and a visit with a dietician should be considered. Giardiasis can cause diarrhea, and her daycare job would certainly expose her to infection, but her small bowel histology would not be explained by giardia infection. While patients with celiac disease are at risk of an enteropathy T-cell lymphoma, it is much more rare than gluten ingestion or contamination. Small intestinal bacterial overgrowth can cause duodenal intraepithelial lymphocytosis and villous atrophy, but would not typically cause the degree of histologic changes noted here. Refractory sprue is also a rare complication of celiac disease, but ensuring no gluten ingestion or contamination is required first.

Reference:

47. A
The 24-hour pH/impedance tracing demonstrates a non-acid reflux event. The bottom tracing indicates pH >4 during a reflux episode, which would be expected in the setting of twice daily PPI. The distal impedance sites detect a reflux episode up to the mid-esophagus, characterized by a >50% drop in baseline impedance that moved in a retrograde direction. Of the management options, GABA-B agonists may reduce transient lower esophageal sphincter relaxation (TLESR) and possibly augment sphincter pressure. In randomized controlled studies, GABA-B agonists have reduced acid and non-acid reflux episodes. Given that acid appears adequately suppressed, addition of an H2 receptor blocker is unlikely to provide added benefit. Fundoplication is controversial in non-acid reflux, and the data remains scarce and mostly uncontrolled. Finally, SSRIs have a more defined role in the management of reflux hypersensitivity and functional heartburn than in patients with non-acid reflux.

References:
48. **E**

This HBV/HIV coinfected patient has hepatocellular carcinoma (HCC) based on CT imaging. The first CT is the pre-contrast study. The second CT is the arterial phase study and demonstrates hyperintensity of the lesion. The third CT is the portal venous phase and demonstrates classic washout of the lesion. These findings are diagnostic of HCC. Thus, he does not require liver biopsy. Given that he is decompensated, he needs to start therapy for hepatitis B and HIV, and a tenofovir-based therapy will allow successful viral suppression for both diseases. Given his decompensation and hepatoma, he should be referred for consideration for liver transplant, as his CD4 count is above 200, and his HIV and HBV should be able to be suppressed post transplant. Interferon is contraindicated due to decompensation, and lamivudine can be given with other anti-virals, such as tenofovir, but not as monotherapy. Entecavir may be given to suppress HBV DNA, but can generate HIV resistance so this choice is less optimal though one can add entecavir to an HIV patient who is on HAART therapy and who has complete viral suppression of their HIV.

References:

49. **C**

The EUS image is diagnostic of a serous cystadenoma, previously described as microcystic adenoma. Characteristic findings include a conglomeration of small cysts. The vast majority of these cysts remain benign and rarely progress to malignancy, thus surgical excision is not warranted unless the patient develops symptoms related to the cyst. An ovarian stroma is seen with mucinous cystadenomas. The cyst wall lining in serous cystadenomas is glycogen filled cuboidal cells. Mucoid material is not seen from the ampulla in serous cystadenomas. The table summarizes these findings (Table courtesy of Dr. John DeWitt).

Reference:

50. **A**

The biopsy shows a representative histological picture of acute alcoholic hepatitis, with PMN's, Mallory bodies, and steatosis. The patient's discriminant factor is 43.6 [(4.6x (PT-Control)+Bilirubin). Once there is no evidence of infection or high risk of bleeding, oral steroids may provide a treatment option for severe alcoholic hepatitis. Although their benefit has been called into question based on more recent studies, the preferred regimen is prednisolone 40 mg for 28-30 days. Pentoxifylline has been recently shown to be of very limited use despite initial enthusiasm for its use. NAC and ursodiol have no therapeutic role in EtOH hepatitis.

Reference:

51. **D**

The endoscopic lesion and the corresponding hypoechoic submucosal lesion on rectal ultrasound represents a rectal carcinoid. Fifty percent of rectal carcinoids are asymptomatic and found routinely on endoscopy. Rectal carcinoids do not produce 5-HIAA. If on RUS, the lesion is confined to the mucosa and submucosa and is <1.0 cm, endoscopic removal is recommended. Size correlates with probability of metastasis. There is a <5% risk of metastasis with lesions <1.0 cm; majority of metastatic lesions are >2.0 cm. These lesions need to be removed with wide margins surgically after detailed imaging. The management of lesions between 1-2 cm is controversial. Muscular invasion, symptoms, and ulcerations are poor prognostic signs and the patient should undergo surgery.

Reference:

52. **D**

This patient has Osler-Weber-Rendu disease (hereditary hemorrhagic telangiectasia) with demonstration of large numbers of prominent GIAD throughout the gastrointestinal tract as evident on prior endoscopic examinations and the video capsule endoscopy study. Endoscopic therapy for GIAD can be successful, but is associated with high recurrence rates of 30-40%. Recurrence rates would be expected to be increased in patients with hereditary syndromes, and in situations of predisposing conditions including aortic stenosis (Heyde’s syndrome), and chronic renal failure. Therefore, while repeat deep enteroscopy could be performed, the success of this procedure would not be expected to be high, as demonstrated by this patient’s history. Aortic valve replacement has been demonstrated to be an effective therapy in patients with aortic stenosis and GIAD (Heyde’s syndrome). Hormonal therapy has not been demonstrated to be effective for GIAD in randomized controlled trials. Ongoing supportive care with transfusions could be performed, but could be associated with risks including infections, volume overload, and allergic reactions. The usage of somatostatin analogs has been demonstrated to be an effective therapy for GIAD when
the endpoints of bleeding cessation, mean hemoglobin values, and need for transfusions were assessed. In a recent meta-analysis analyzing the utility of somatostatin analogs, the pooled odds ratio was 14.5 (95% CI: 5.9-36) for bleeding cessation. Therefore, a trial of subcutaneous octreotide starting at 25-50 mcg twice daily would be a reasonable next step. In a recent randomized controlled trial, thalidomide was demonstrated to be effective compared to iron therapy for bleeding GIAD, but its usage was limited by side effects of somnolence and neuropathy in 30-40% of the patients.

References:

53. D
This patient has experienced a secondary loss of response due to development of anti-drug antibodies (ADAs). In patients with low-level ADAs to infliximab, it is possible to add an immunomodulator (e.g., thiopurine or methotrexate), increase the dose of the drug, and successfully continue treatment. However, with high-level antibodies in the setting of a secondary loss of response, the most appropriate management is to switch to a different anti-TNF agent. If these patients are not already on an immunomodulator, adding one to the new anti-TNF agent is a smart strategy because we know that these patients are already at risk for ADA development.

References:

54. B
The figure demonstrates a Cameron’s ulceration in a large paraesophageal hernia. The best test to make this diagnosis would be a repeat upper endoscopic examination. This paraesophageal hernia appears to have been missed on the initial endoscopic examination. Prior studies in patients undergoing either video capsule endoscopy (VCE) or deep enteroscopy have demonstrated that a significant percentage of patients can manifest findings in the upper or lower GI tracts that were missed on the initial examinations. In a 2011 retrospective study of 707 VCE studies, significant findings were detected in 3% of the outpatients and 7% of the inpatients, with erosive esophagitis being the most common finding for male inpatients. In another 2009 study of 143 patients undergoing deep enteroscopy, definite sources of bleeding were found outside the small bowel in 24% of patients with possible sources of bleeding in 50%. In both studies, the most common findings included missed peptic ulcerations, gastrointestinal angiodysplastic lesions, large hernias, and colonic pathology. Therefore, repeat upper and lower endoscopic examinations should be considered in patients with poor preparation or after a normal small bowel examination. Given the equivalent diagnostic yield of VCE and deep enteroscopy, the latter would not be recommended unless the patient had ongoing overt bleeding and there was a high suspicion for a small bowel source. A nuclear medicine scan would only be recommended in the setting of ongoing active bleeding. CT enterography examination could be considered after a negative VCE examination and repeat endoscopic examinations to exclude submucosal pathology. Iron supplementation alone could be a useful strategy for patients unable to undergo surgical revision, but a laparoscopic hernia repair would be the optimal therapy.

References:

55. B
Solid pseudopapillary tumors are rare and can be located anywhere in the pancreas. They often occur in young females in the 3rd and 4th decades of life. Once resected it is associated with an excellent survival. The EUS image shows a hypoechoic solid lesion, which would not be characteristic of an IPMN or pseudocyst. Pancreas adenocarcinoma primarily occurs after the age 45 years old, more commonly after the age of 65 years of age and rarely presents as a discrete, well-defined lesion with sharp borders.

Reference:
56. C
HCC can be diagnosed radiologically, without the need for biopsy if the typical imaging features are present. This requires a contrast-enhanced study (dynamic CT-scan or MR). In the arterial phase, HCC enhances more intensely than the surrounding liver because the arterial blood in the liver is diluted by venous blood that does not contain contrast, whereas the HCC contains only arterial blood. In the venous phase, the HCC enhances less than the surrounding liver because HCC does not have a portal blood supply and the arterial blood flowing through the lesion no longer contains contrast, whereas the portal blood in the liver now contains contrast. This is known as “washout.” The presence of arterial uptake followed by washout is highly specific for HCC.
Reference:

57. C
In patients who are in remission on anti-TNF monotherapy or combination therapy with an immunomodulator, the 1-year relapse rate after stopping infliximab is approximately 50%.
References:

58. D
Serrated polyps can be classified as the common hyperplastic polyps, sessile serrated adenomas/polyps and traditional serrated adenomas. The histology in this case describes a sessile serrated adenoma/polyp with serrations and dilated glands at the base also known as boot- shape glands. These boot- shape glands are used to make the diagnosis of an SSA/P. According to the U.S. Multi-Society Task Force on Colorectal Cancer, a repeat exam should be performed in 3 years for an individual with an SSA/P that is 1 cm or larger. Unfortunately, not all serrated polyps can be classified as easily as this one. An expert panel has made suggestions regarding recommended intervals for serrated polyps based on anatomical location and size. This obviates the need for histology and the challenges regarding the interpretation. The recommendation by the expert panel for an SSA/P is 3 years as well.
References:

59. A
This case highlights the 3 most important principles associated with acute GI bleed management in a patient prescribed a direct oral anticoagulant (DOAC): 1) reverse antithrombotic effect, 2) rapid endoscopic hemostasis, and 3) restart the antithrombotic once hemostasis is achieved. An important caveat to DOAC temporary interruption is the risk of arterial or venous thromboembolism due to the short half-life of the drug. When held, DOAC plasma concentration decline rapidly as half-lives elapse. Fifty percent of the anticoagulant effect remains after one half-life elapses; for apixaban, the half-life is 12 hours. The risk of decreased anticoagulant effect is greatest among those at moderate to high-risk thromboembolic risk (5% to >10% risk). These patients include those with atrial fibrillation and recent (<6 months prior) stroke or transient ischemic event, or with a CHA2DS2-VASc score >3, which describes this patient (CH2DS2-VASc score of 4). Given the patient's normal CrCl, you do need to consider the rapid dissipation of anticoagulant effect in this patient given his last dose would have been the evening prior to his presentation to the ED. With aggressive perfusion of normally functioning kidneys, up to 40-50% of apixaban is likely to be excreted. By the time you complete your endoscopy (>12 hours after his last dose) and resume his anticoagulation with his evening apixaban dose, <50% of the anticoagulant effect of apixaban is likely present. Thus, delay of re-initiation of his apixaban at original dose will leave this moderately high risk patient at risk of thromboembolism (answers B, C, and D are incorrect). In all patients, re-initiation of anticoagulant immediately once endoscopic hemostasis is achieved is desirable. In most patients, DOAC can be restarted immediately following the procedure.
References:

60. C
This is pseudomembranous colitis and is most likely from *Clostridium difficile* infection (CDI). CDI has been increasingly reported in healthy individuals in the community, and these community-acquired infections represent approximately one-third of all *C. difficile* cases. In a recent study of 984 patients with community acquired CDI, 36% did not receive antibiotics within 12 weeks of the diagnosis. The 2 biggest risk factors are exposure to antibiotics or exposure to the organisms, usually through hospitalization or long-term health facilities. Other factors include co-morbid conditions, gastrointestinal tract surgery and
medications that reduce gastric acid. The patient has no risk factors and although he was sent for open access colonoscopy, he describes recent symptoms. Fluid aspirated at time of the colonoscopy confirmed diagnosis and treatment was initiated.

References:

61. C
This tracing demonstrates the so-called “butterfly” appearance that happens when the catheter cannot pass the LES. This happens in achalasia, but also can happen with hernia. There is evidence of peristalsis in the body of the esophagus, so this is not achalasia. She could have esophageal spasm, but that cannot be diagnosed based on either of these swallows. The LES in this patient may or may not be normal, but that cannot be determined since the catheter did not pass through the LES.

References:

62. B
Given the diffuse area of the lesion and the longstanding history of ulcerative colitis, this lesion warrants colectomy. Whether this should be a partial or total colectomy may be debated. Medical therapy will not change the size of the lesion. In general, a lesion this diffuse will be difficult to resect completely, but if you attempt it, you should not wait a year to see if you removed it completely.

Reference:

63. D
The esophageal impedance/manometry demonstrates a rise in intragastric pressure generating a retrograde pressure wave moving up the esophagus. This correlates with regurgitation of liquid to the proximal esophagus, as evidenced by the impedance tracing. This study is consistent with rumination syndrome. The optimal treatment for rumination syndrome is behavioral therapy, often with diaphragmatic breathing exercises.

Reference:

64. E
Based on results from the STORI trial, there was an 88% remission rate achieved with re-introduction of infliximab after drug cessation led to a flare. In this study, all patients continued their immunomodulator when stopping anti-TNF therapy. When restarting infliximab, there was no infusion reaction and no difference in infliximab trough levels.

Reference:

65. E
The liver biopsy shows classic intracellular globules that stain positive with periodic acid-Schiff (PAS) after treatment with diastase (PAS-D), which represent mutant alpha 1-antitrypsin protein. This patient’s alpha 1-antitrypsin level was 31 mg/dL (reference range: 90-200 mg/dL) and her phenotype was Pi*ZZ, which is associated with severe alpha 1-antitrypsin deficiency. There is a distinct bimodal distribution consisting of neonatal hepatitis and cholestatic jaundice in infants, and chronic liver disease in adults with a mean age of diagnosis in the fifth decade. There is currently no approved treatment for liver disease associated with alpha 1-antitrypsin deficiency short of liver transplantation. The other answers are treatments associated with other chronic liver diseases: vitamin E for nonalcoholic steatohepatitis (NASH), prednisone and azathioprine for autoimmune hepatitis, tenofovir for hepatitis B, and trientene for Wilson’s disease. Although this patient likely has nonalcoholic fatty liver disease based on her risk factors and ultrasound, she does not have features of NASH on the liver biopsy, and vitamin E is not specifically recommended in patients with diabetes.

Reference:

66. E
The pressure topographic image describes the anal and rectal pressure changes before and during attempted defecation. At rest, the patient has a normal resting anal sphincter tone with a pressure of 50-60 mm Hg. When asked to attempt defecation, the subjects demonstrate a paradoxical increase in anal sphincter tone with pressures in the 60-90 mm Hg range. Furthermore, there is only minimal rise in intrarectal pressure (dark blue to a light blue change only). This suggests an impaired push or propulsive effort, as reflected by weak intrarectal pressures. This pattern of defecation is consistent with type II dyssynergia. Recto-anal inhibitory reflex is not shown and a squeeze response is also not shown. Although answer D is partially correct, the emphasis here is on changes during attempted defecation.
Pancreatic enzymes would not help since there is no evidence of pancreatic disease. with no pancreatic abnormality on the scan. IBD serology is too nonspecific, and should not be used in this clinical scenario. eosinophilic enteritis. Endoscopic ultrasound of the pancreas is not needed given the abnormal small bowel on imaging, inflammatory bowel disease (IBD), severe celiac disease, lymphoma, and other rare diseases. This patient actually had The small bowel is diffusely abnormal; thus, biopsies are needed for a definitive diagnosis. The differential includes nutrition in patients with scleroderma.

References:

67. A Volvulus occurs when the intestine twists about the mesentery and is an uncommon cause of intestinal obstruction. Volvulus most commonly presents in the sigmoid colon, where predisposing risk factors include its anatomic characteristics as well as colonic dysmotility. Older, debilitated patients with underlying neurologic disorders are at higher risk. Marked colonic dilation is seen, and associated "inner tube" and "coffee bean" signs have been described. CT scans are helpful but not necessary and can demonstrate a "whirl" sign at the mesentery as indicated in the attached image. The goals of management are treatment of the acute episode and prevention of recurrence. Acutely, endoscopy is both diagnostic and therapeutic as it provides decompression. Thereafter, elective sigmoid resection is often recommended to prevent recurrence. Medications to control pain such as narcotics would not be indicated in this setting as it may mask symptoms of acute obstruction. Cecostomy is not the optimal immediate treatment in this setting given that flexible sigmoidoscopy both assesses mucosal viability and effectively provides decompression. Observation is also not optimal as volvulus can progress to colonic ischemia if not treated promptly.

Reference:

68. A Angiography with transcatheter arterial embolization is an important adjunctive therapy in the management of lower gastrointestinal bleeding. Transcatheter arterial embolization is a safe therapy with major adverse events occurring in less than 2% of patients. Complications of angiography with embolization include arterial dissection, ischemic colitis, and bowel infarction (rare). When patients develop recurrent gastrointestinal bleeding after angiography, endoscopic evaluation may be useful to re-evaluate the area of concern. In this case, the endoscopic image demonstrates ulcerative changes consistent with the diagnosis of ischemic colitis. Notably, this patient recovered nicely with conservative therapy. Since the endoscopic evidence is consistent with the diagnosis of ischemic colitis secondary to prior angiography with transcatheter arterial embolization, the other options are incorrect.

Reference:

(Notes: Questions 69-72 all relate to a single case history. References for all answers are listed after #72 below.)

69. B The breath hydrogen curve shows an early and sustained rise in hydrogen following oral ingestion of glucose. The rise in hydrogen is much greater than that of methane. Therefore, a diagnosis of small intestinal bacterial overgrowth can be made.

70. A Given the demonstration of small intestinal bacterial overgrowth (SIBO), one needs to look for an underlying cause. Given celiac disease has already been ruled out and SIBO confirmed, EGD with biopsy would be unnecessary. There are no features in the history to suggest a neuroendocrine tumor, so serum chromogranin A level is not needed, and small intestinal manometry is unlikely to add clinically useful information. Small bowel imaging, either with small bowel barium radiograph or cross-sectional enterography imaging, would be recommended.

71. D The radiographic image demonstrates the classical "stacked coin" (arrowed) appearance of scleroderma.

72. C Antibiotic therapy is the best option using rifaximin or another antibiotic in a dosage that has been shown to be effective in SIBO. There is no evidence that antibiotic sensitivity testing of jejunal cultures improves outcome. While referral to a rheumatologist might well be appropriate, it does not obviate the need to address her gastrointestinal issues.

References:
References:

74. C
Pancreas divisum is quite common (~8% of population) and is not always the primary causative factor in recurrent acute pancreatitis. This patient has a cystic lesion in the head of the pancreas with ductal communication evident based on the MRCP and high amylase content. There is an elevated CEA content indicating a mucinous type of cyst. The focal main pancreatic duct dilation adjacent to the cyst and mucin extrusion at the minor papilla indicate that the patient has a mixed-type (rather than branch-type) intraductal papillary mucinous neoplasm (IPMN). Patients with main-duct and mixed-type IPMN have a high prevalence of invasive carcinoma and warrant surgical resection. It is also quite likely the recurrent pancreatitis is because of ductal plugging by mucin and that the attacks will remit after Whipple. A cholecystectomy will be performed as part of the Whipple operation; however, a lap chole by itself will not suffice to treat his recurrent pancreatitis. In general, patients with pancreas divisum do not get gallstone pancreatitis involving the body and tail of the pancreas because of separate drainage of the dorsal pancreatic and bile ducts.
Reference:

75. C
This patient’s abdominal scar should be a clue to a past surgical history that may be relevant not only for the patient’s history of bleeding and pain, but also important in guiding the management plan. He actually had a history of testicular cancer and abdominal radiation that was only obtained after administration of the video capsule endoscopy (VCE) elsewhere. The radiation therapy led to multiple small bowel obstructions due to fixed abnormal loops of ileum from radiation enteritis. The patient was subsequent treated by laparoscopy with small bowel resection of the affected small bowel segment with resolution of his pain and anemia.
Given the risk of capsule retention and possible small bowel perforation, VCE should not be performed in patients with known small bowel strictures or significant abdominal pain suggesting the presence of a stricture. In this setting, the patient should first undergo either a CT or MRI enterography examination or a patency capsule examination prior to administration of the VCE. While some series have established a diagnosis of radiation enteritis with VCE, a history of abdominal radiation should be considered a contraindication to administration of a capsule endoscope, and an imaging study of the small bowel should be obtained first. Deep enteroscopy to remove the capsule endoscope could be problematic in the setting of adhesions, leading to bowel injury. Radiation enteritis can mimic small bowel Crohn’s disease, but there is no evidence that 5-ASA medications can treat strictures secondary to the disorder.
References:

76. B
The initial CT [FIGURE 76A] demonstrates a linear hyperdensity in the gastric antrum and strongly suggests a bony object that probably pierces the entire gastric wall. Her history is consistent with an embedded fishbone in the gastric antrum. Endoscopy demonstrates the embedded fishbone [FIGURE 76B], Sharp-pointed objects such as bones, straightened paper clips, toothpicks, or needles represent a medical emergency because of the risk of perforation. Complications have been described in up to 35% of such patients. EGD is the best choice for perforating foreign bodies if there exists no abscesses outside the gastrointestinal tract or signs of overt perforation. A protector hood, endoscopic cap, or use of a long overtube facilitates safe endoscopic removal of such foreign bodies. These devices protect the esophageal and pharyngeal mucosa from inadvertent injury during foreign body retrieval. In this case, surgical management is not required as endoscopic retrieval was easily performed without adverse consequence. Further observation with medical therapy places the patient at increased risk of additional complications, such as abscess formation or frank perforation with pneumoperitoneum.
Reference:

77. C
The patient has severe erosive disease in the field of Barrett’s with deep ulceration. Therefore, vigorous acid suppression should be pursued prior to further attempts at eradication by either focal or circumferential ablation. Stepwise radial endoscopic resection of a circumferential length of BE this long would likely result in severe stricturing, and does not address the non-healing issue above.
Reference:
78. C
This patient has multiple risk factors for ischemic pouchitis, including male gender, history of vascular disease (portal vein thrombosis), and excessive weight gain. The asymmetric distribution of pouch inflammation with a sharp demarcation between the inflamed and non-inflamed parts is highly suggestive of ischemic injury. In addition, the failure to respond to antibiotics, corticosteroids, and anti-TNF biologics makes the diagnosis of microbiota or bacteria-associated pouchitis, autoimmune pouchitis, or Crohn’s disease of the pouch unlikely.
Reference:

79. C
The patient meets criteria for absent contractility based on the lack of contractile activity in 10 swallows and the IRP below 15 mmHg. However, in the revised Chicago Classification, an IRP that is above 10 mmHg in the context of absent contractility should raise suspicion for achalasia since the pressure dynamics of bolus emptying may not allow an elevated IRP with a poorly functioning esophageal body. Additionally, esophageal pressurization (seen in the fourth swallow), should alert one to the possibility of achalasia. Given this issue, it is recommended that the patient undergo a timed barium esophagram (TBE) to rule out achalasia. If there is significant bolus retention, the patient should be managed similar to achalasia and treatment should be targeted at relieving the obstruction at the esophagogastric junction if this is revealed on the timed barium esophagram. If emptying is normal on the TBE, the patient should be considered to have absent contractility and this could potentially be related to an early presentation of a collagen vascular disorder. Endoscopic ultrasound would be helpful if there was still some doubt as to the diagnosis and some suspicion of pseudoachalasia based on presentation or endoscopic findings. Empiric dilation would not be helpful in a patient with a normal IRP and no evidence of mechanical obstruction. Going directly to surgical myotomy would be incorrect until the contractility abnormality can be more fully assessed and characterized.
References:

80. C
A first step in utilizing therapeutic drug monitoring (TDM) is to recognize the specific clinical scenario. A primary non-responder is a patient who never responded to biologic therapy (infliximab in this case). This needs to be differentiated from a secondary loss of response, which is when a patient initially responds to biologic therapy but then there is a clear recurrence of active disease. The term primary loss of response is not used for description of these scenarios, and anti-TNF failure should not be used as it is not descriptive enough to help guide further management.
References:

81. D
The patient presents with a partial portal vein thrombosis. Partial portal vein thrombosis is seen in 8-25% patients with cirrhosis. The thrombosis is partly due to increased vascular resistance because of the cirrhotic liver. Thrombotic states should be excluded because patients may require anticoagulation if a prothrombotic state is present. In the setting of a history of variceal bleeding, anticoagulation should not be attempted. TIPS could be considered, but she has had difficult-to-control encephalopathy which may be exacerbated by TIPS. Therefore, no further intervention is needed.
References:

82. C
This acute presentation is notable for recent onset of abdominal pain, diarrhea, and volume depletion. Although he is mildly febrile, his physical examination is not specific. Laboratory values document leukocytosis, hemoconcentration, and pre-renal azotemia. The CT demonstrates small bowel wall thickening due to edema. Although not demonstrated in the image, there was also thickening of the terminal ileum, but the entire colon was normal in appearance. Stool cultures later revealed the presence of Campylobacter jejuni. Of the choices listed, only Campylobacter jejuni would cause these acute symptoms with jejunal edema/inflammation. There has been no recent antibiotic use and Clostridium difficile-related colitis would not explain the CT findings, given the small bowel, but no large bowel involvement. Although Giardia lamblia may cause diarrhea due to small bowel inflammation, the acute presentation argues against the diagnosis. He does have a family history of inflammatory bowel disease, but the acute nature of the presentation suggests an infectious etiology and his sister has ulcerative colitis, so this radiologic presentation, which is more reminiscent of Crohn’s disease, would be less likely. Certainly, subsequent outpatient follow-up is important given this presentation.
Reference:
This patient's presentation is most likely related to a food borne illness. His history clearly demonstrates an acute disorder and, in fact, his symptoms quickly resolved. However, the CT scan was notable for some changes in the mesentery. It is quite possible these changes were related to his presentation, but the possible diagnosis of sclerosing mesenteritis was entertained. Sclerosing mesenteritis is part of a spectrum of disorders and various other terms have been utilized to describe these radiographic findings, including mesenteric panniculitis and mesenteric lipodystrophy. This disorder tends to affect men (2:1) in the 5th to 7th decades of life. It is important to consider the possible diagnoses of lymphoma, peritoneal carcinomatosis, peritoneal tuberculosis, small bowel carcinoid, and systemic amyloidosis.

Reference:

Endoscopic pancreatic cystgastrostomy has emerged as an important management strategy for pancreatic fluid collections and walled off pancreatic necrosis. After creation of the endoscopic pancreatic cystgastrostomy, stents (2 or more) are placed through the cystgastrostomy to avoid closure and allow for continued drainage. Although there exist no trials specifically evaluating the timing of stent removal, the current opinion is that stents should remain in place for 2-3 months. During this time period, granulation of the pseudocyst base occurs, reducing the risk for recurrence after stent removal.

Reference:

The most reasonable approach to managing this elderly ICU patient with hemodynamic instability would be to undertake ERCP today and place a plastic biliary stent to provide temporizing biliary drainage. After resolution of cholangitis, ERCP can be repeated for definite management to clear the stones. This may involve sphincterotomy followed by balloon sphincteroplasty with mechanical or cholangioscopy-directed lithotripsy. The cholangiogram demonstrates multiple extremely large stones. Complete clearance of such a large stone burden would require an ERCP procedure of longer-than-typical duration—not a reasonable undertaking in an elderly hemodynamically unstable patient who would be better served with a procedure of considerably shorter duration with stent placement alone, which would allow prompt resolution of sepsis. Technically complex, protracted clearance of large stones is best deferred until the patient is clinically stable and better able to withstand a prolonged procedure under anesthesia. A low-cost plastic stent would be the most cost-effective way to provide such temporizing drainage in this patient’s setting. A considerably more expensive fully covered self-expanding metallic stent would not be likely to provide any clinical advantage over a large-diameter plastic biliary stent in this patient’s situation, particularly since the stent would likely be removed within a few weeks at repeat ERCP when sphincterotomy and definitive stone clearance would be undertaken. Extracorporeal shock-wave lithotripsy (ESWL) is seldom employed for bile duct stones and would not be an appropriate modality for providing drainage in the setting of acute cholangitis.

References:

The patient's clinical history, physical exam, laboratory results, and imaging study suggest early pancreatic cancer. An interval CT scan in 3 months may reveal a mass, but the cancer might progress and become unresectable during that time period. MRI and MRCP may define the bile duct and pancreatic duct, but will not allow a tissue diagnosis. 18FDG-PET CT offers no significant advantage over CT or MRI in this setting although it has a higher accuracy over CT in diagnosis of regional and distant metastases. Endoscopic ultrasound (EUS) examination has a high sensitivity of 88% and accuracy of 93% for detecting pancreatic masses, and is more sensitive than CT scan in detecting masses less than 2.4 cm in size.

Reference:

The finding of a negative IgA-based TTG at presentation raises suspicion for another cause of villous atrophy in this case. The severity of her diarrhea also raises suspicion for a non-celiac villous atrophy such as an immune-mediated- or auto-immune enteropathy. The next step in evaluating this patient is to test for celiac-associated HLA DQ2 and DQ8. If these are negative, then non-celiac villous atrophy becomes highly likely. A marginally lowered total serum IgA is non-specific and not likely to lead to a false negative IgA-based TTG serology in untreated celiac disease. Diarrhea caused by gastrointestinal hormone excess is not associated with villous atrophy. A repeat small intestinal biopsy is not likely to show substantial change compared to one month earlier. Colon biopsy for microscopic colitis is reasonable but would not answer the central question of whether this presentation is that of celiac crisis or a severe non-celiac enteropathy.

References:


88. 

A distal pancreatectomy is not the correct choice in this case. Distal pancreatectomy, while safe in the hands of experienced surgeons, has an approximately 25% complication rate, <1% mortality, and 15-20% diabetes rate. If this were an mucinous cystic neoplasm or side-branch IPMN of this size, one might more strongly consider resection because of the family history, though with weak supportive evidence. The recent AGA guidelines on pancreatic cysts suggest that decision making for premalignant pancreatic cysts in patients with a family history of pancreatic cancer needs to be individualized, sometimes departing from guidelines. However, the MRCP shows the typical honeycomb appearance of a serous cystadenoma, which has an extremely low incidence of malignancy. Although distal pancreatectomy is not the correct choice in this case, diagnosis of serous cystadenoma should be confirmed on stronger grounds. PET scans have not been found to be useful in diagnosis or clinical management of pancreatic cystic lesions. Because the patient is concerned and this is a new diagnosis, waiting for 1 year and repeating MRCP is not ideal. The best choice is to perform EUS to confirm the micro-cystic or honey-comb appearance of the cyst, and fluid aspiration with cytology and CEA measurement. A negative cytology and low CEA values (e.g., <5 ng/mL) in cyst fluid will help confirm the diagnosis of serous cystadenoma. A core biopsy, if performed, can also clinch the diagnosis of serous cystadenoma. Once the diagnosis is confirmed, some authorities suggest surgery for cysts >4 cm in size due to higher chances of further growth and development of symptoms. However, this recommendation is not uniformly followed and symptoms (e.g., obstructive jaundice) from cysts in the distal pancreas are extremely uncommon. After the EUS, limited imaging surveillance to assess the rate of growth may be reasonable.

References:

89. 

Gastric adenomas are tubular, tubulovillous, or villous. In general, the patients with gastric adenomas are either asymptomatic or have vague symptoms. Villous adenomas are likely to progress to cancer over time, and the size of the lesion in this patient is also concerning. Considering her significant comorbid conditions, she would not be a good surgical candidate. Observation with EGD in 3 months brings the trepidation of malignant transformation during the follow-up period. Argon plasma coagulation of the lesion would be possible, although not the best option, if the lesion were small. Endoscopic resection would allow complete removal of the well-demarcated lesion, thus providing a definitive treatment in this patient. Endoscopic resection can be performed either by endoscopic mucosal resection (EMR) or endoscopic submucosal dissection (ESD). EMR is easier to perform than ESD, but is limited by inability to ensure a clear lateral margin because the resection can only be done in a piecemeal fashion producing multiple resected segments. Furthermore, if the lesion is adherent to the submucosal layer by an inflammatory and/or scarring process, EMR becomes difficult or impossible due to inability to lift the lesion by submucosal injection. On the other hand, ESD provides en bloc resection with accurate assessment of lateral margin status (en bloc resection rate: 56-73% in EMR vs. 88-95% in ESD). Although ESD is safely done with acceptable complication rates in an expert’s hands, procedure-related perforation (0.5-3.2% in EMR vs. 1.2-9.7% in ESD) and delayed bleeding (3.9% in EMR vs. 1.8-16% in ESD) are the concerns.

Reference:

90. 

Level 1 evidence suggests that longitudinal pancreatico-jejunoscopy with (Frey’s) or without coring out the head of stones and fibrotic tissue is superior to endoscopic pancreatic duct stenting with lithotripsy for pain relief in patients with dilated pancreatic duct and stones due to chronic pancreatitis. Surgery provided superior and more durable pain relief, while endoscopic treatments required multiple procedures. While ESWL and pancreatic duct stenting can be considered for those unfit or unwilling for surgery and is recommended as the initial approach by some societies, this approach entails multiple procedures with high costs and is inferior for both pain relief and duration of relief. The lifetime risk of pancreatic cancer in patients with chronic pancreatitis is about 4-5%, and reasonable suspicion of underlying malignancy should be maintained in those with suddenly worsening pain, jaundice, and weight loss. However, in most cases, a high-quality pancreatic protocol CT scan will suffice to look for evidence of pancreatic cancer. Routine use of EUS to look for small cancers is unproven in the setting of painful chronic pancreatitis. Limited weak evidence suggests that uncoated pancreatic enzymes (not the usual coated formulations) may decrease pain in a subset of patients with chronic pancreatitis. Theoretically, they work by inhibiting duodenal CCK receptors in the proximal duodenum, diminishing pancreatic stimulation. Notably, a recent systematic review did not support use of enzymes for pain.
References:

91. B
Presacral sinus is a common surgical complication in patients with ileal pouch-anal anastomosis (IPAA), resulting from a leak at the anastomosis. The pouchogram showed the classic picture of presacral leak. The patient has characteristic pain and tenderness at the coccyx during examination. The presence of acute surgical leak, low-grade fever, leukocytosis, weight loss, and anemia is a common presentation of presacral sinus. Presacral sinus should not be confused with Crohn’s disease (CD) of the pouch. Presacral sinus can be treated with endoscopy or surgery.
Reference:

92. A
Regurgitation is a frequent symptom of achalasia and can sometimes be confused with reflux – in fact, most series of achalasia report that a subset of patients were referred with suspected reflux. The manometry is a classic representation of achalasia, with pan-esophageal pressurization (consistent with a type II pattern). Diffuse esophageal spasm and hypercontractile esophagus would demonstrate lower esophageal sphincter relaxation and some preserved peristalsis in the body of the esophagus. Scleroderma would classically be associated with absent peristalsis and a hypotensive lower esophageal sphincter. Gastroesophageal reflux does not have a characteristic manometry pattern and often is associated with a normal manometry or hiatal hernia.
References:

93. B
While endoscopy is not generally viewed as a good test to evaluate gastric motility, the finding of retained food on endoscopy despite a prolonged fast is highly specific for gastroparesis and has excellent correlation with gastric scintigraphy. As gastric emptying can vary based on caloric intake, the finding of retained food after a large meal and shorter fast is not necessarily indicative of gastroparesis, but in this case, the patient ate a small dinner and fasted for 12 hours, making her finding of gastric food retention diagnostic of gastroparesis in the context of appropriate symptoms. The 5 treatments listed have all been studied for treatment of gastroparesis but work through different mechanisms. Mirtazapine may work through multiple different pathways, but it is believed that its main effect is through neuromodulation and as an anti-emetic. Likewise, ondansetron works primarily as an anti-emetic and may slow gastric emptying slightly. Gastric electrical stimulation may affect perception of nausea but is not believed to be a powerful prokinetic. Likewise, buspirone may improve fundic accommodation but is not a powerful prokinetic per se. Erythromycin is a motilin analogue that functions as a prokinetic and in this case is the correct answer. While it does not have an anti-emetic component and subsequently may not be the most useful therapy for the symptoms mentioned above, erythromycin is the only true prokinetic of the 5 answers listed.
Reference:

94. D
The patient has normal LFTs and her EUS exam shows normal, nondilated bile ducts and pancreatic ducts. The patient would be considered to have type III SOD under the Geenen Classification. The recent EPISOD trial showed no benefit to ERCP and sphincterotomy in these patients. A trial of medications to treat abdominal pain may be more beneficial.
Reference:

95. E
Antibiotic therapy, with no intervention to provide biliary drainage until the patient is post-partum, is not sufficient. In addition to antibiotics, resolving the biliary obstruction is necessary to resolve the infection. Percutaneous biliary catheter drainage (PTC) in interventional radiology would provide biliary drainage. However, there are limitations: it is a temporizing measure while the catheter remains in situ, exposes the fetus and mother to x-ray, and has a higher risk of bleeding than ERCP. Laparoscopic cholecystectomy with intraoperative cholangiography and clearance of bile duct stones in one procedure is not the best choice. Many surgeons still avoid elective cholecystectomy in pregnant patients who are in or approaching their third trimester, in spite of recent guidelines underscoring the safety of laparoscopic cholecystectomy in pregnant patients. Also, surgery in this patient may entail common bile duct exploration, which is more invasive and may require open surgery for completion. ERCP with biliary stent placement alone would avoid sphincterotomy and stone extraction, but would provide only temporizing drainage until sphincterotomy and stone extraction could be performed post-partum. Given that the patient is only 27 weeks’ gestation, she may require another ERCP with stent exchange prior to delivery, which could potentially subject both the patient and her
fetus to an additional risk. Thus, the most reasonable plan to address choledocholithiasis in this patient is to undertake ERCP with biliary sphincterotomy and stone extraction to address her present cholangitis episode by providing definitive drainage and to prevent gallstone pancreatitis.

References:

96. E

The video shows some fresh blood in the stomach and a possible gastric submucosal lesion with no signs of bleeding. There is no evidence of varices or a Dieulafoy. On withdrawal of the endoscope, the source of bleeding is seen. The visualized source is a linear ulcer in the distal esophagus, consistent with a Mallory-Weiss tear.

References:

97. D

This video demonstrates an EUS-guided celiac ganglion injection. The celiac ganglion are almond or oval hypoechogenic strictures usually visible anterior to the celiac artery takeoff. It has been shown in a randomized trial that direct injection of the ganglia provides superior pain relief compared with diffuse injection around the celiac artery. EUS-guided celiac plexus blocks have been used with modest success for the temporary treatment of pain in chronic pancreatitis. The intervention interrupts pain carried by sensory efferent fibers relayed through the celiac ganglion. These are visceral rather than somatosensory fibers, and thus a good response indicates the presence of visceral pain. Because of the complex (and sometimes non-visceral) nature of pain in chronic pancreatitis, only about 50% of patients respond. Also, the response is temporary and variable in duration, with an average duration of 4-5 weeks. Celiac ganglia ablation with alcohol is sometimes used to provide more durable relief in patients with pancreatic cancer. However, it can cause more tissue and vascular damage, and is considered too risky for a benign disease such as chronic pancreatitis.

References:

98. C

The video shows a shallow ulcer in the proximal duodenum with a visible vessel, with intermittent arterial bleeding and active oozing. Although it is correct to start a PPI in this setting, this is not the next best step alone. The blood transfusion threshold in patients with upper GI bleeding is recommended to be 7 g/dL in most patients. An exception for this threshold would be in the setting of active coronary artery disease. This patient does not meet this exception criteria and should have a blood transfusion threshold of 7 g/dL, and thus he does not need to be currently transfused. This ulcer meets criteria for high-risk stigmata of recent hemorrhage and needs to be endoscopically treated. Hemoclips or combination therapy, consisting of epinephrine injection followed by bicap, are considered adequate endoscopic therapy.

References:

99. D

Chronic radiation proctopathy occurs in 5-20% of patients after pelvic radiotherapy for prostate or gynecological malignancy. Acute radiation proctitis refers to radiation-induced injury during the time of radiation therapy and for a short period after completion, usually defined as 6 months. The symptoms of acute radiation proctitis, experienced transiently by most patients, include diarrhea, mucus discharge, cramping, bloating, tenesmus, anal pain, incontinence, and minor rectal bleeding. Of these, diarrhea is most common and affects 50-75% of patients. Chronic radiation proctopathy may present as a continuation of the acute proctitis, or begin after a variable latent period (typically at least 90 days). In those affected with chronic disease, symptoms develop at a median of 8-12 months after completion of radiotherapy. The cardinal sign of chronic radiation proctopathy that distinguishes it from acute radiation proctitis is the presence of small-vessel vasculopathy. Clinical manifestations of chronic radiation damage include fecal urgency, incontinence, pain, bleeding, mucus discharge, and strictures. Rectal fistula or perforation can rarely occur.

Misoprostol, given as a daily suppository, was ineffective in controlling bleeding from both acute and chronic radiation proctitis. RFA is a promising and safe endoscopic therapy for chronic radiation proctitis. A small retrospective study demonstrated complete resolution of symptoms and cessation of all visible bleeding in those treated with RFA. Additionally, treated patients had a significant increase in hemoglobin. Adverse events associated with this therapy included rectal pain (12%) and a single episode of severe bleeding, and there were no instances of ulcer, fistula, or stricture.
The efficacy of argon plasma coagulation (APC) for treating rectal bleeding due to chronic radiation proctitis has been reported to be between 80-90%. However, the literature is limited by few prospective studies, and many studies utilize APC after other therapies have failed. Patients often require multiple sessions to control bleeding, with an average of 2.13 sessions per patient (range 1-5 sessions). The reported complication rate of APC in this group of patients may be as high as 30-35%, and includes rectal pain, tenesmus, non-healing ulcers and stricture. Following resolution, chronic radiation proctitis can recur and the risk increases with aspirin and anticoagulant use. Recurrent disease can be re-treated with APC.

References:

100. D
The video shows an ulcer in the duodenum with active oozing. Thus, this ulcer meets criteria for high-risk stigmata of recent hemorrhage and needs to be endoscopically treated. It has been shown that endoscopic therapy is effective in patients with INR values up to 2.5 and thus endoscopic therapy is appropriate to perform at this time without delay to correct the anticoagulation. The use of injection monotherapy is inferior to other monotherapies and combination therapy and should not be used alone. Combination therapy consisting of epinephrine injection followed by another modality, either bicap or hemoclip, is considered adequate endoscopic therapy. Although hemoclip may make more intuitive sense to use in this setting as they cause less tissue injury, both therapies have been shown to be effective in patients with INR values up to 2.5. An octreotide drip can be used to treat both variceal and non-variceal bleeding, although is not indicated in this setting.

References:

101. D
The video shows an ulcer on the greater curvature of the stomach with a possible flat spot at 8 o’clock. There is no active spurting or oozing bleeding and there is no visible vessel. Thus, this ulcer does not have high-risk stigmata of recent hemorrhage and does not need to be endoscopically treated. The margins of this ulcer are heaped up and the appearance is concerning for a malignancy. Thus, obtaining biopsies from this ulcer to evaluate for malignancy is the most important next step. In fact, this turned out to be moderately differentiated adenocarcinoma of the stomach. Biopsies away from the ulcer are helpful to evaluate for H. pylori. However, in this case, it is more important to determine if this ulcer is malignant.

Reference:

102. D
The prevalence of APC and MYH mutations in patients with multiple adenomas was assessed in a cross-sectional study of 8,676 individuals. Fullgene sequencing and large rearrangement analysis of the APC gene and targeted sequence analysis for the 2 most common MUTYH mutations (Y179C and G386D) was performed. The likelihood of detecting a genetic mutation causing familial adenomatous polyposis (FAP) or MYH-associated polyposis increased with increasing adenoma count. Nine percent of individuals with 10-19 adenomas, 17% with 20-99 adenomas, and 63% with 100-999 adenomas had an APC or bi-allelic MYH gene mutation. Detection of a mutation has implications for affected individuals with regard to frequency of colonoscopy and surveillance of extra-colonic organs, and for management of family members.

Reference:

103. D
The most common impacted esophageal foreign bodies in adults are meats or other foods, especially after larger restaurant meals with concomitant alcohol ingestion and less attention to chewing and swallowing. The term “steakhouse syndrome” has been used to describe this clinical scenario, and is often due to a GE junction (Schatzki) ring, but can also be due to other peptic strictures, tumors or eosinophilic esophagitis. There is no role for papain administration for any food impaction, as it has been associated with hypernatremia, mucosal erosion, and rarely, perforation. Barium esophagram is contraindicated in the setting of esophageal obstruction, as there is a significant aspiration risk, and the contrast can compromise subsequent endoscopic visualization. Indeed, an endoscopic examination should be performed urgently in this case, given the patient’s inability to swallow even his own saliva, implying complete (or near complete) obstruction. ENT evaluation and rigid endoscopy can be helpful in removing sharp and pointed objects located very proximally in the esophagus or pharynx, but requires general anesthesia, has a higher perforation risk, and isn’t relevant for this patient.

References:
104. E
The patient’s presentation is classic for eosinophilic esophagitis. In this case, the mucosal rings of eosinophilic esophagitis were incorrectly diagnosed as Schatzki’s “rings,” since the latter finding occurs singularly and only at the gastroesophageal junction. Achalasia can commonly occur in a young age group; however, it typically presents with dysphagia to solids and liquids. This patient only had dysphagia to solids suggesting a structural and not motility abnormality. The prudent next step in this patient would be to repeat his endoscopy and biopsy both the distal and proximal esophagus for confirmation of the diagnosis of eosinophilic esophagitis.

References:

105. D
Approximately 65% of patients with a perianal fistula have a short-term response to infliximab at 3 months. Of those successfully treated, only approximately 33% will have long-term response at 1 year. Thus, approximately 21% (0.65 x 0.33) will have sufficient healing to have a seton safely removed at 1 year.

Reference:

106. C
The patient in this example has NASH proven by biopsy. This patient is only a carrier, but does not actually have hereditary hemochromatosis or iron overload and phlebotomy is not an accepted therapy for such patients. NASH is an inflammatory disease and commonly has elevated markers of inflammation. Serum ferritin is a non-specific marker of inflammation and many patients with significant NAFLD will have an elevated ferritin <1,000 ng/mL. Her liver biopsy confirms NASH and the iron staining is consistent with that diagnosis. Her HFE genotype does not predispose to iron overload.

Reference:

107. C
The patient meets criteria for functional chest pain based on Rome IV criteria. She did not respond to a high-dose PPI test and has a negative pH study off medication supporting that reflux is an unlikely contributor to the current symptomatology. The manometry is consistent with a mild motor abnormality and this particular diagnosis is not associated with chest pain. The fact that the patient is denying heartburn does not support a diagnosis of functional heartburn, and the lack of a symptom reflux correlation during ambulatory reflux monitoring rules out the reflux hypersensitivity. This underlying cause for functional chest pain is unknown and most treatments focus on neuromodulation and behavioral treatments. This patient may be a good candidate for a neuromodulator such as low-dose tricyclic antidepressant or alternative therapies such as biofeedback and hypnotherapy.

References:

108. D
Hepatic adenoma in a woman of this age on oral contraceptives is a very likely possibility. While hepatic adenoma is not a contra-indication for guided biopsy these days, it is still rarely done because of the still-existing concerns of bleeding and the frequent inability to diagnose the disease due the small amount of tissue obtained. The differential for this lesion is broad, including hepatic adenoma. Therefore, one can not recommend option B without further support for hepatic adenoma diagnosis. The same reasoning applies even more to option C as it involves intervention. Dynamic MRI with gadoxetic acid distinguishes hepatic adenoma from focal nodular hyperplasia, hemangioma, HCC, and cholangiocarcinoma with good accuracy and will be the ideal choice especially to avoid radiation of CT scan. Dynamic CT and nuclear medicine imaging could also diagnose hepatic adenoma with reasonable accuracy.

Reference:

109. A
The patient has autoimmune hepatitis triggered by minocycline. Thus minocycline should be discontinued. Prednisone is reasonable to induce biochemical remission followed by a taper. Answer B is incorrect because minocycline should be discontinued. Another reasonable option (although not given as a choice in the answers) would be to stop the minocycline and follow her liver enzymes for a few weeks before deciding if steroids were necessary. She does not have evidence of alcoholic hepatitis by history or on histology, so pentoxyphylline is inappropriate. An ERCP is unnecessary because there is no evidence of mass or bile duct obstruction on ultrasound or CT and the liver biopsy provides a diagnosis. IV n-acetylcysteine has shown some benefit in nonacetaminophen acute liver failure but she does not have acute liver failure.

Reference:
110. D
It is very likely that this patient has a syndromic colorectal cancer since he has such a strong family history. Further, he meets Amsterdam criteria for Lynch syndrome. Turcot syndrome is a variant of Lynch syndrome, which includes brain tumors such as medulloblastoma and malignant glioma. Since it is a Lynch variant, the patient will have a mutation in a mismatch repair gene such as MLH1, MSH2, MSH6, and PMS2. Patients at risk for Lynch syndrome should undergo colonoscopic screening for colorectal cancer (CRC) every 1 to 2 years, beginning between ages 20-25 years or 2-5 years before the youngest age of diagnosis of CRC in the family if diagnosed before age 25 years. His cancer will arise from an adenoma, not a hamartoma. Patients with Lynch syndrome who develop skin lesions, such as keratoacanthomas and sebaceous tumors have a variant named Muir-Torre syndrome.

Reference:

111. D
A number of risk factors exist that identify patients who are at increased risk for aspiration from enteral feeding, such as age >70 years, altered mental status, presence of endotracheal tube, prolonged supine position, and bolus infusion of formula. Practices should be used to reduce aspiration in these patients deemed to be at risk. Steps to reduce aspiration include elevation of the head of the bed, switching to continuous infusion of formula, diverting the level of infusion distally in the GI tract, initiating prokinetic agents, and using chlorohexidine mouthwash. Bundling a number of these strategies may be more effective in changing outcome. Use of feeding protocols with nursing directives is an important strategy for improving the timeliness, adequacy, and safety of delivering enteral nutrition (EN). Multiple studies have shown that increased use of these protocols has shown better outcomes regarding the delivery and safety of enteral feeding. Gastric residue volume (GRV) should not be used routinely as a monitor in hospitalized patients on EN. GRV has been shown to be a poor marker of true gastric volume, gastric emptying, risk of aspiration, pneumonia, or any poor outcomes. The practice of checking GRV has not been standardized and values are difficult to interpret. Therefore, this practice is not recommended in the monitoring of patients on enteral nutrition. Patients on EN should be monitored daily to assess for bowel sounds, passage of stool and gas, and abdominal distention. However, patients do not have to have bowel sounds on physical exam to initiate tube feeds.

Reference:

112. A
Ursodeoxycholic acid has not been shown to be effective in treating PSC in any dose. A 2010 guideline issued by the American Association for the Study of Liver Diseases recommends against use of ursodeoxycholic acid in the treatment of PSC; whereas a 2015 guideline from the American College of Gastroenterology does not make a recommendation about using ursodeoxycholic acid other than to note that it should not be used in doses >28 mg/kg/day. The guidelines note the lack of proven efficacy on hard endpoints such as death or liver transplantation for low- or intermediate-dose ursodeoxycholic acid and the worse outcomes described in a randomized controlled trial of high-dose ursodeoxycholic acid. Although standard-dose ursodeoxycholic acid has not been associated with adverse outcomes, ursodeoxycholic acid cannot be recommended routinely until further data on efficacy and safety are available.

References:

113. A
This patient most likely has bile salt-induced diarrhea. This occurs as a result of the secretagogue effect of bile salts in the colon, inciting Cl- and water secretion, and is most often seen in the setting of impaired absorptive capacity of the ileum or bile acid supplementation. When due to ileal resection, this type of diarrhea is encountered when <100 cm of small bowel has been resected. Resection of >100 cm of the ileum is associated with short chain fatty acid and fat malabsorption. Disaccharides can be maldigested and associated with abdominal symptoms resembling irritable bowel syndrome, but are not malabsorbed with ileal resection.

References:

114. D
At present there are 3 FDA-approved tests to evaluate gastric emptying in the United States. Gastric scintigraphy (solid food, 4-hour) is the gold standard and the most widely available of these 3 tests at present; however, it does involve radiation exposure (although not a large amount), which would pose a problem in the case above. The other 2 options are the wireless motility capsule as well as C-13 breath testing, which was just recently approved. Glucose breath testing is employed to evaluate for small intestinal bacterial overgrowth and would not be an appropriate test to evaluate for gastroparesis. Antrroduodenal manometry assesses gastric and small bowel motility, but does not look at transit per se.

Reference:
115. B
This patient takes ibuprofen daily for arthritis in his hips. NSAIDs are associated with the development of microscopic colitis, and discontinuation can lead to resolution of diarrhea. As he is having mild symptoms, additional therapy is not required at this time. If symptoms were more severe, or if he desires, an anti-diarrheal medication such as loperamide could be used along with discontinuation of ibuprofen. If symptoms do not respond to NSAID withdrawal, additional therapy with bismuth or budesonide should be considered. Amlodipine has not been associated with lymphocytic colitis.

References:

116. D
It is unnecessary to hold the rivaroxaban in this patient with a high risk of cardioembolic event for a planned diagnostic EGD with biopsies and aspirate (answer D is correct). The planned endoscopic procedure is considered to be low-risk for post-procedural bleeding. In addition, this patient has a CHA2DS2-VASC score of 5 points, which is a moderate-high score, reflecting a significant risk of a cardioembolic event. This patient’s annual risk of stroke/TIA or systemic embolism is 7.2% to 10%. Thus, the risk-benefit profile of this patient would be unfavorable for discontinuation of her novel oral anticoagulant (NOAC) prior to such a low-risk endoscopic procedure (Answers A, B, C are incorrect).

References:

117. C
In a trial of 100 patients undergoing laparoscopic reflux surgery, age <50 and typical reflux symptoms were both positive predictors of a good outcome. Response to acid-suppression was a predictor of a good outcome therefore, answer C is the best answer in this question. Duration of symptoms is one of the predictors of Barrett’s esophagus, but has not been correlated with surgical outcomes. Likewise, a history of erosive esophagitis (EE) confirms GERD, but probably does not predict outcome any better than a positive pH test in a patient without esophagitis. On the other hand, patients with neither EE nor a positive pH test should not undergo reflux surgery.

Reference:

118. B
This is a patient with longstanding ulcerative colitis who has developed a flat visible lesion with high-grade dysplasia. If the lesion could be completely removed with endoscopic resection, then this may be an option; however, this is not possible and there is still low-grade dysplasia in the mucosa around the polyp. Active rectal inflammation, pseudopolyps in the colon, and a history of cigarette smoking may minimally impact on the risk for dysplasia, but none are factors in deciding to pursue a colectomy (answers A, C, and D are incorrect). Anti-TNF therapy and thiopurines do not increase the risk of colon cancer and these combinations of medications also have no bearing on the decision for a colectomy in this patient (answer E is incorrect).

A total proctocolectomy is the correct choice for a patient with longstanding UC who develops a high-grade dysplastic lesion that cannot be endoscopically resected (answer B is correct).

References:

119. C
The risk of adverse events associated with anti-TNF use is commonly overestimated. The rate of serious infections has been found to be 3%. The risk of adverse events that lead to discontinuation of therapy has been found to be 10%. The rate of non-Hodgkin’s lymphoma associated with anti-TNF use is 0.06% over the course of 1 year. Lupus-like reactions are rare and occur in approximately 1% of patients treated with anti-TNF agents.

References:

120. A
In the absence of alarm symptoms (dysphagia, odynophagia, GI bleeding, iron deficiency anemia, and weight loss) and risk factors for Barrett’s esophagus (age >50 years, male sex, Caucasian race, and presence of reflux symptoms for >5-10 years), and typical reflux symptoms (heartburn and sour regurgitation), empiric PPI trial is accepted as the first-line of therapy. There
is no need to proceed with EGD. If there is no response to the PPI trial for 2 months, EGD would be recommended as a next step. Amongst the lifestyle modification methods, elevating the head end of the bed and avoiding food in the 2-3 hour period before going to bed have been found to be beneficial. Abnormal pH monitoring with a 24-hour trans-nasal catheter or 48-hour wireless probe is required before proceeding with endoscopic or surgical therapy for non-erosive reflux disease in patients with refractory reflex or in situations where the diagnosis of reflux is in question. There is no strong evidence about the efficacy of avoiding caffeine, alcohol, and certain foods.

Reference:

121. A
The Advisory Committee on Immunization Practices (ACIP) recommends the use of hepatitis B vaccination for all unvaccinated adults aged 19-59 years upon diagnosis with type 1 or type 2 diabetes mellitus, in whom an increased risk for acute hepatitis B has been reported by the Centers for Disease Control and Prevention (CDC). Unvaccinated adults age 60 years or older may be vaccinated at the discretion of the treating physician after individualized assessment of risk and likelihood of mounting an adequate immune response to HBV vaccination. This patient does not meet an indication for upper endoscopy such as iron deficiency anemia, and does not meet criteria for formal weight loss methods such as pharmacotherapy, sleeve gastrectomy, and bariatric surgery.

References:

122. A
Olmesartan is an angiotensin II receptor blocker (ARB) that rarely causes an enteropathy clinically similar to celiac disease. Patients present with diarrhea, weight loss, and may have electrolyte disturbances and acute kidney injury from volume depletion. Patients have villous atrophy, and celiac disease must be excluded. This can happen at any time on the medication, even after years, and resolves with discontinuation of olmesartan. Much less often, this enteropathy may occur with an alternative ARB or angiotensin converting enzyme (ACE) inhibitor. Patients may present quite ill, and anti-hypertensive medications are routinely discontinued due to severe volume depletion. Subsequently, clinical improvement occurs. However, recognition of this enteropathy is important as re-challenge with olmesartan (or another causative medication) can cause serious harm. There is no benefit to further imaging of the small bowel. The treatment is withdrawal of olmesartan and supportive care, and budesonide is not indicated.

References:

123. D
The most likely diagnosis in this patient is fatty liver disease causing both her pain and her elevated transaminases. An MRI/MRCP scan may suggest that diagnosis and can rule other less likely disorders. Her pain is not typical biliary pain, so she should not be considered for either a cholecystectomy or an ERCP. Indeed, the CCK-stimulated HIDA scan should not have been obtained since if it was abnormal, it may have led to unnecessary cholecystectomy.

References:

124. E
There are many risk factors associated with small bowel bacterial overgrowth (SIBO), including structural (small bowel diverticuli, post-surgical), motility-related (medications, idiopathic, diabetes), and disruption of antimicrobial defenses. One common cause of altered microbiota is chronic use of a proton pump inhibitor (PPI). Patients taking PPIs are 2.46 times more likely to have SIBO than those not taking this medication. Given this patient’s chronic use of PPIs, answer A is incorrect. While we often use symptoms to define those patients who may have SIBO, evidence from a recent study of 168 patients demonstrated that there was no difference in intensity, frequency, and duration of abdominal pain, bloating, gas, diarrhea, and constipation between patients with and without bacterial overgrowth.

Either glucose or lactulose can be used as substrates for a breath hydrogen test. The accuracy of glucose blood testing is variable, with a sensitivity ranging from 20-93% and a specificity ranging from 30-86%. Because glucose is absorbed proximally, it can theoretically miss distal small bowel bacterial overgrowth. Alternatively, lactulose, a non-absorbable disaccharide, will pass unabsorbed by the small intestine to the colon. The sensitivity of this test ranges from 17-68% with a specificity of 44-86%. Lactulose is more sensitive, as it will evaluate for bacterial overgrowth throughout the length of the small
bowel, but as lactulose accelerates oro-cecal transit time, it becomes difficult to distinguish between SIBO and metabolism of this sugar by colonic bacteria. The addition of measuring methane in addition to measuring hydrogen in breath testing is believed to increase the accuracy of these tests by identifying the 20-30% of the population who produce methane as a main product of fermentation of carbohydrates. SIBO is a relapsing disease, especially when there are underlying factors that predispose to this condition. Relapse may be seen in 44% of patients at 9 months after induction of remission with rifaximin, hence answer E is best.

References:

125. E

The majority of patients (65%) who present with chronic heartburn symptoms will be found to have a normal EGD. After a normal EGD, the next step in the work-up should be a pH impedance study off PPI in order to assess whether the patient has abnormal acid exposure and a positive symptom correlation. Most patients undergoing such testing will be found to have normal acid exposure. If the patient has increased acid exposure, they should be treated with a different PPI. If the patient is found to have normal acid exposure but a good correlation with weakly acidic or non-acidic reflux events, they meet Rome IV criteria for reflux hypersensitivity. Most patients will be found to have normal esophageal acid exposure and poor symptom correlation. In this case, esophageal manometry should be performed to rule out a motility disorder before giving the patient a diagnosis of functional heartburn. Patients with functional heartburn are often treated with lifestyle modifications, such as an anti-reflux diet or elevation of the head of the bed, though the evidence to support this is weak. Still, measures such as trigger avoidance may be tried. PPIs are often continued, and neuromodulatory drugs and alternative therapies, such as biofeedback, hypnotherapy, or acupuncture may be tried.

References:

126. B

The patient is on maximal diuretics, and still has significant ascites. Metolazone would likely just cause worsening of his electrolytes and/or renal function. Stopping his diuretics could be considered, but he would likely need even more frequent paracenteses. His liver synthetic function is also still quite impaired (despite the prolonged abstinence period). This patient has completed the required alcohol rehab program for most liver transplant programs in the country. He should be referred urgently to a transplant center. TIPS could be dangerous and put him at high risk for decompensation given his underlying MELD-sodium score of 28. Potentially, this could be an option depending on the decision of the transplant center. They might consider listing him for transplant and then doing a TIPS. Treating hepatitis C with this much decompensation would not likely reverse his significant hepatic dysfunction or portal hypertension. Also, it would require a significant level of HCV treatment expertise. Again, this might be considered by the transplant center in the future.

References:

127. A

Rectal indomethacin has been shown to reduce rates of post-ERCP pancreatitis in a population mainly composed of patients with known or suspected SOD. Indomethacin may not reduce PEP rates in unselected patients, although research on this topic is ongoing. The exact role of indomethacin in unselected patients remains unclear, though some centers are using indomethacin in all patients undergoing ERCP.

References:

128. B

Maintenance therapy is recommended and required for patients with chronic ulcerative colitis, because they have a significant risk of relapse off medical therapy. Although there is interest and emerging data on dose reduction of maintenance therapy, this currently lacks strong support in the medical literature. There is interest in fecal transplantation for the treatment of UC; however, there is not sufficient data demonstrating efficacy at this time and fecal microbial transplantation is still regulated by the FDA for investigational use only. There is no indication to begin an immunomodulator.
References:

129. E
Despite some studies showing lower mortality reduction from right-sided cancers as compared to left-sided cancers, colonoscopy is still superior to any other test listed to reduce right-sided colorectal cancer mortality. FOBT, FIT, fecal DNA testing do not differentiate the right or left side of the colon, and flexible sigmoidoscopy does not reach the right colon. Reference:

130. D
Urgent endoscopy (urgent defined as generally within 2 hours) is recommended for complete esophageal obstruction, and for sharp and pointed objects in the esophagus, to reduce the substantial risk of perforation. The negative radiographs are not surprising with a wooden (not radiopaque) toothpick ingestion and should not provide any comfort; her ongoing symptoms are concerning for a toothpick impaction in her esophagus. If present, the toothpick needs to be removed urgently. Contrast radiographs are unlikely to be helpful, and carry a risk of aspiration as well as potentially impairing visualization at upper endoscopy.
References:

131. B
With a personal and family history of endometrial cancer, and a small advanced adenoma, this patient has a history suspicious for Lynch syndrome (LS). Several published criteria, as well as on-line models, can offer guidance on pursuing testing. Amsterdam I criteria considers only the family history of colon cancer, while Amsterdam II also considers extra-colonic cancers. Although this patient does not meet the Amsterdam II criteria, most patients are missed as the sensitivity is very low at ~22%. The Revised Bethesda Guidelines offer another set of criteria for LS. Given a first-degree family member with a LS-associated tumor diagnosed at younger than age 50, she qualifies for further testing. Once the decision is made to evaluate for LS, the ideal starting point is the tumor specimen from the patient or affected family member. Immunohistochemistry staining of the tumor for mismatch repair gene products or staining for microsatellite instability, a phenomenon manifested by ubiquitous mutations at simple repetitive sequences found in the tumor DNA, guides germline testing.
References:

132. D
Early literature suggested that young patients were more likely to suffer from recurrent attacks and that recurrence in this group was particularly virulent. Therefore, elective surgery was recommended after just 1 or 2 attacks. However, current data indicate that although the rate of recurrence is somewhat higher in young patients, the risk of complications is not substantially greater. Furthermore, young people with recurrence who are managed medically have favorable outcomes. In general, recurrent diverticulitis tends to be less severe than incident disease; the vast majority of complications occur with the first attack. The most recent American Society of Colon and Rectum Surgeons guideline states that the decision to recommend elective sigmoid colectomy after recovery from uncomplicated acute diverticulitis should be individualized. Factors to consider when considering elective surgery for recurrent diverticulitis include comorbid disease and surgical risk, response to medical therapy, severity and frequency of attacks and impact of attacks on lifestyle, livelihood and other patient reported outcomes.
References:

133. D
The risk of recurrence is decreased but not eliminated following elective colon resection for diverticulitis. The risk of recurrence with medical treatment is estimated to be 189/1,000 patients and 76/1,000 patients following elective resection. Several randomized trials have evaluated elective laparoscopic versus open surgery for diverticulitis. These studies have found lower short-term complications and faster recovery with the laparoscopic approach. The long-term advantages of the laparoscopic over the open approach are less clear aside from cosmetics. Some patients may have persistent bowel symptoms following elective colon resection for diverticulitis. It is important to assess functional symptoms that are prevalent following an episode of diverticulitis, as these may not resolve with surgery.
whether performed endoscopically or by a transhepatic route. Therefore, stent placement is not necessary if surgery is not indicated. Prospective studies have shown no advantage in terms of surgical outcomes to preoperative decompression if biliary drainage through a transhepatic route is not necessary. The patient has obstructive jaundice due to pancreatic cancer. There is no clinical evidence of acute cholangitis, and he has no pruritus. The cancer appears to be localized with no evidence of vascular invasion or metastasis, and surgical resection is indicated. The patient’s symptoms resolved immediately after the balloon dilation procedure and have not recurred in the weeks until symptoms are resolved.

References:

134. **E**

Reactivation of hepatitis B infection is observed in approximately 20-50% of hepatitis B carriers with positive HBsAg undergoing cancer chemotherapy, particularly when these regimens include corticosteroids and/or rituximab. Prophylactic antiviral therapy can reduce the rate of reactivation, the severity of reactivation hepatitis flares, and mortality due to reactivation-associated fulminant liver failure. The 2015 American Gastroenterological Association guideline addressing HBV reactivation recommends primary prevention with antiviral therapy for all hepatitis B carriers regardless of baseline serum HBV DNA at the onset of rituximab-based cancer chemotherapy and maintained for a period of 6-12 months post completion of chemotherapy, or indefinitely if the pre-chemotherapy HBV DNA is high (>2,000 IU/mL), or until they reach treatment endpoints as in immunocompetent patients. This patient is a HBsAg positive carrier within the inactive carrier phase of HBeAg negative infection, and has not resolved the infection. On-demand antiviral therapy after reactivation in the context of viral monitoring during chemotherapy is not supported by current evidence and is inferior to pre-emptive antiviral therapy. Hepatitis B immune globulin and vaccination are ineffective for prevention of HBV reactivation. Although peg-interferon alfa-2a represents a first-line antiviral agent for chronic hepatitis B, it should be avoided due to additive bone marrow suppressive effects in context of cancer chemotherapy.

References:

135. **D**

Strictureplasty is indicated for patients with reduced length of small bowel since the goal is always preservation of small bowel. For unknown reasons, recurrence rates are lower following strictureplasty than following resection, and strictureplasty should be considered even if this is the patient’s first operation. Several strictureplasties in a short length of bowel is technically difficult and associated with poor outcomes; therefore, answer D is correct, given the presence of 3 strictures in a short segment of bowel.

Reference:

136. **C**

This patient has a benign pyloric stenosis due to a non-steroidal anti-inflammatory drug (NSAID)-induced ulcer. A benign pyloric stricture will usually respond to aggressive acid-suppression, treatment of underlying *Helicobacter pylori* infection if present, and sequential endoscopic balloon dilation. While discontinuation of the NSAID is important, this alone is insufficient for management of the pyloric stenosis. Similarly, increasing the PPI dose to twice daily may heal the ulcer, but likely will not resolve the gastric outlet obstruction. Studies have demonstrated that pure medical management of benign gastric outlet obstruction is effective in only 50% of cases. There is no role for empiric *Helicobacter pylori* therapy. However, in patients with documented infection, treatment of infection results in a decreased need for repeat balloon dilation. Surgery for the pyloric stenosis should be reserved for patients who do not respond to endoscopic balloon dilation.

Endoscopic balloon dilation has been demonstrated to be the most successful non-surgical therapy for benign pyloric stenosis. An original study of 23 patients demonstrated clinical resolution of symptoms after dilation over 31 months. A retrospective review of 72 patients with benign gastric outlet obstruction who underwent a total of 177 balloon dilations demonstrated immediate relief in 80% of patients with sustained relief in 70%. Endoscopic balloon dilation should be performed using through-the-scope balloon dilation catheters. If the stricture cannot be traversed, wire-guided balloon catheters should be used in conjunction with fluoroscopy for direct visualization of the dilation. Endoscopic balloon dilation should be repeated every 1-2 weeks until symptoms are resolved.

References:

137. **D**

The patient has obstructive jaundice due to pancreatic cancer. There is no clinical evidence of acute cholangitis, and he has no pruritus. The cancer appears to be localized with no evidence of vascular invasion or metastasis, and surgical resection is indicated. Prospective studies have shown no advantage in terms of surgical outcomes to preoperative decompression whether performed endoscopically or by a transhepatic route. Therefore, stent placement is not necessary if surgery is not performed.

References:
delayed. Preoperative decompression may be appropriate when surgery is delayed or the patient requires treatment of acute cholangitis or symptomatic relief of pruritus.

References:

138. D
Female patients, patients with known or suspected SOD, and patients undergoing minor papilla interventions are all at increased risk of post-ERCP pancreatitis. Patients with pancreatic cancer tend to have a low rate of PEP, as the pancreatic duct is often already obstructed and the pancreas itself is often atrophic by the time of the ERCP.

References:

139. A
The patient appears to have alcohol-induced cirrhosis. The elastography measurement is consistent with fibrosis stage 4 or cirrhosis. Elastography is a recently approved technique in the U.S. and is now being incorporated into ultrasound devices and appearing in many hospitals. Elastography can accurately determine if a patient has cirrhosis. Despite having cirrhosis, this patient has normal liver function, and normal Child-Pugh and MELD scores. He therefore does not require evaluation for liver transplant at this time and is not necessary. Patients with cirrhosis are at increased risk to develop hepatocellular carcinoma (HCC) and should be screened for HCC on a regular basis. The manner in which to screen for HCC is ultrasound every 6 months. Although very commonly used, AFP is no longer recommended by AASLD as a screening tool for HCC.

References:

140. E
There are 3 diagnostic criteria for serrated polyposis, and fulfillment of any 1 of the 3 criteria makes the diagnosis. Any serrated class lesion, including sessile serrated polyp, hyperplastic polyp, or traditional serrated adenoma can be counted toward the diagnosis of serrated polyposis. One of the criteria is 5 or more serrated class lesions proximal to the sigmoid, of which at least 2 are >10 mm in size. Thus, this patient meets the diagnosis. Sessile serrated polyp and sessile serrated adenoma are synonymous, but the overwhelming majority have no dysplasia. The “CARE” study found that serrated lesions 5-20 mm in size were 5 times as likely to be incompletely resected compared to conventional adenomas. However, recent trials show that resection by EMR using a contrast agent in the submucosal injection fluid results in a complete resection rate that is at least as high as that for conventional adenomas.

Reference:

141. A
This patient has cholangitis and remains hypotensive and tachycardic after volume resuscitation. Based on the Tokyo guidelines, he has moderate acute cholangitis. Appropriate antibiotic choices would include an antipseudomonal broad-spectrum penicillin such as piperacillin/tazobactam, a fluoroquinolone such as levofloxacin, a carbapenem such as meropenem, or a third-generation cephalosporin such as ceftriaxone. However, a first-generation cephalosporin, exemplified here by cefazolin, would not be an appropriate choice. Its poor activity against gram-negative enteric organisms, which are the preponderant causative agents in acute cholangitis, renders cefazolin and other first-generation cephalosporins inadequate for empiric treatment.

References:

142. C
ERCP is safe in pregnancy, but the indication needs to be clear. The lead apron is placed underneath the patient since the radiation beam originates below the table. The grounding pad should be on the upper torso and away from the uterus in case of stray electrical currents. If there are many or large stones and ductal clearance is not achievable or would result in a more prolonged and risky procedure, placing a biliary stent to temporize the obstruction until after successful delivery would be a reasonable strategy.
143. B

IBD with colitis leads to dysbiosis even in the absence of antibiotic therapy. Hence CDI and recurrent CDI is more common in IBD. Neonates do not have a developed colonic microbiome. Hence, their colonization resistance against *C. difficile* is minimal and accordingly >50% of neonates become colonized. They do not develop disease, however, possibly because they do not yet express toxin receptors on their colonic epithelium. Dysbiosis and loss of colonization resistance against *C. difficile* is usually restored within 1-4 weeks of discontinuing antibiotic therapy, rarely it may take longer. Hence, this is the period of vulnerability to CDI. Hospital-associated CDI is almost always associated with antibiotic treatment. Conversely ~50% of cases of community-acquired CDI develop with no history of recent antibiotic treatment.

References:

144. C

The quantity of alcohol consumption in this patient is under the threshold generally associated with alcoholic liver disease (>60 gm per day for at least 10 years). The AST:ALT ratio <2 also points away from alcoholic liver disease. Alpha-1-antitrypsin levels may be falsely elevated as an acute phase reaction, even in patients with A1AT deficiency. Therefore, for patients with suspected A1AT deficiency, phenotyping is appropriate. Serum iron studies may lack specificity in the setting of advanced liver disease, especially in patients with a history of increased alcohol consumption. Also, while a liver biopsy may be considered in the future, the best first step in this patient would be a serologic work-up for other causes of liver disease.

References:

145. C

In a randomized controlled trial of 80 patients, including patients in clinical remission for longer than 6 months on combination therapy, the immunomodulator was withdrawn and clinical outcomes were followed. There was no need for early rescue doses of infliximab or an increase in infliximab discontinuation. Hospitalization and surgery rates were not affected. C-reactive protein levels were higher and infliximab trough concentrations were lower in patients who had stopped their immunomodulator.

References:

146. C

Fecal incontinence is often of obstetric origin related to sphincter injury or pudendal nerve damage. It is not uncommon for symptoms to develop years or decades after obstetrical injury, due to lack of compensatory muscle strength with age. Initial therapy often consists of fiber supplementation, loperamide or other anti-diarrheals as needed, and a bowel regimen. In this case, loperamide would not likely help given her baseline constipation and evacuation difficulty. While rifaximin can be used to treat co-existent small intestinal bacterial overgrowth (SIBO), this patient does not have a clinical presentation suggestive of SIBO. Repeat colonoscopy would be of little utility at this point. Sacral nerve stimulation is an FDA-approved option for fecal incontinence, but most protocols require more frequent episodes of incontinence. It should be reserved for those patients who have failed medication trials and physical therapy. Physical therapy would be a reasonable next step, and studies suggest improvement in approximately 70% of appropriately selected patients.

Reference:

147. E

The combination of elbasvir (NS5A inhibitor) and grazoprevir (second generation NS3/4A protease inhibitor) received FDA approval in January 2016 for the treatment of hepatitis C genotypes 1 and 4. The C-EDGE TE trial randomized patients who had previously failed peginterferon and ribavirin to elbasvir/grazoprevir for 12 or 16 weeks with or without ribavirin. Genotype 1 patients treated for 12 weeks without ribavirin had overall sustained virologic response rates at 12 weeks (SVR12) of 94%, which was similar to response rates in the groups with 16 weeks of treatment with or without ribavirin, and in the subset of patients with compensated cirrhosis. The C-SURFER study evaluated the safety and efficacy of this combination versus
placebo for hepatitis C genotype 1 patients with chronic kidney disease (CKD) stages 4/5 (eGFR <30 mL/1.73 m2), including 75% on hemodialysis. The combination was safe in these patients, with a SVR12 rate that exceeded 94%. The clearance of elbasvir/grazoprevir is not affected by renal insufficiency; therefore, a distinct advantage of this regimen is its safety in CKD stages 4/5. Efficacy of this regimen was consistent across subpopulations including genotypes 1a and 1b, diabetes, and hemodialysis. Elbasvir/grazoprevir and protease inhibitors in general have not been proven safe and effective in large, randomized controlled studies in patients with decompensated cirrhosis (Child Pugh B/C) and are not recommended in such patients.

References:
1. AASLD and IDSA. HCV guidance: Recommendations for testing, managing, and treating hepatitis C. Available at www.hcvguidelines.org.

148. C
CDI with diarrhea and colitis result from the actions of C. difficile toxins A and B. It has been known for decades that non-toxinogenic strains of C. difficile exist in nature and are also prevalent in the hospital environment. However, they do not cause disease. Hence, non-toxinogenic strains of C. difficile (toxin A negative, toxin B negative) have been considered as a potential “targeted probiotic” against CDI. This possibility has been evaluated in a recent randomized controlled trial. A well-characterized, nontoxinogenic (toxin A negative and toxin B negative), strain of Clostridium difficile showed efficacy in preventing CDI recurrence in patients recently treated for CDI with vancomycin. Recurrence rates in the placebo group after vancomycin therapy for CDI were 30%. This compared to recurrence rates of 11% in the non-toxinogenic Clostridium difficile treated group after vancomycin therapy (p <0.01). Toxin A negative, toxin B positive strains are well recognized and cause CDI and outbreaks of CDI. Toxin B negative, toxin A positive strains are not well documented. Ribotypes 027 and 078 are hypervirulent strains of C. difficile associated with severe disease and CDI outbreaks.

References:

149. A
This patient’s clinical symptoms are not suggestive of Crohn’s disease. His normal fecal calprotectin also makes IBD unlikely. While a family history of Crohn’s disease increases an individual’s risk of IBD, his work-up is normal so he is not likely to have IBD. IBD serology is nonspecific and unlikely to be helpful in this scenario. CT scan is not indicated without any warning signs to suggest Crohn’s disease.

References:

150. B
Sharp pain, especially posteriorly on digital rectal exam, confirms the diagnosis of anal fissure. Hemorrhoids do not hurt unless they are acutely thrombosed. An anoscopy exam can also establish the diagnosis, but may be too painful and is not necessary. Unless there are associated abnormal labs or other alarm symptoms, a colonoscopy is unnecessary in this young woman with her presentation.

References:

151. B
This patient has clinical, laboratory and histologic features that are all compatible with small intestinal bacterial overgrowth (SIBO). Patients who have undergone Roux-en-Y gastric bypass are at risk of SIBO given the presence of bowel that is excluded from the usual flow of digestive enzymes. Diarrhea, bloating, and weight loss are clinical hallmarks of SIBO. While low vitamin B12 levels can be seen in patients who are status-post gastric bypass procedures, the combination of a low vitamin B12 level and a high serum folate level are suggestive of SIBO, the former due to bacteria prematurely cleaving
B12 from intrinsic factor in the bowel, and the latter due to folate production by intestinal bacteria. Isolated small bowel intraepithelial lymphocytosis has been reported in patients with SIBO. While lactose malabsorption and irritable bowel syndrome are common, they should not cause weight loss. Celiac disease is unlikely, given the negative IgA TTG serology and the absence of permissive celiac genotyping (HLA DQ 2 or 8). SIBO is much more likely than a small bowel lymphoma with isolated intraepithelial lymphocytes.

References:

152. B
Suppression of hypothalamic-pituitary-adrenal function by chronic administration of high doses of glucocorticoids is a common cause of adrenal insufficiency. Patients with adrenal insufficiency may present with nonspecific complaints such as malaise, fatigue, and anorexia. Gastrointestinal symptoms, usually nausea and occasionally vomiting and abdominal pain, may also be seen in patients with adrenal insufficiency. Gastrin levels are helpful in the diagnosis of Zollinger-Ellison syndrome, which is not seen in this patient. Histamine may be helpful in the diagnosis of mast cell disorders. VIP levels are helpful in evaluating patient with unexplained diarrhea.

References:

153. B
The image shows a CT scan with uncomplicated sigmoid diverticulitis. There are few randomized trials regarding treatment of this disorder. Historically, diverticulitis has been treated empirically with broad spectrum antibiotics and bowel rest. A randomized controlled multicenter trial in Sweden found no difference in complication rates, length of stay and recurrence at 1 year in patients treated with antibiotics versus those without. Recent American and European guidelines suggest that antibiotics can be used selectively in cases of uncomplicated diverticulitis. Bowel rest is generally recommended, but it has not been shown to improve outcomes. Most patients with uncomplicated diverticulitis who are clinically stable and can tolerate oral intake can be managed in the outpatient setting.

References:

154. C
Recurrent Barrett's esophagus (BE) develops in approximately 25% of subjects who have undergone radiofrequency ablation for dysplastic Barrett's esophagus. This disease is usually amenable to further ablative therapy. Therefore, periodic upper endoscopy as a surveillance tool is suggested, although the optimal interval is not yet known. PPI cessation is not recommended, given that ablation does not obviate reflux disease, and recurrent BE in the unprotected mucosa is a strong possibility. EUS is not highly effective at detecting submucosal BE, and currently is not routinely used in post-ablation monitoring. While the patient might have other indications for aspirin use, no data support its use as an anti-neoplastic measure after endoscopic ablation.

References:

155. D
This patient has type II refractory celiac disease with severe symptoms of malabsorption and recurrence of severe villous atrophy despite adhering to a gluten-free diet. The findings on T cell receptor analysis is consistent with type II refractory celiac. This diagnosis is associated with a poor prognosis (~50% 5-year survival). Deaths typically result from T-cell lymphoma, malnutrition, or infection. Type II refractory celiac does not usually show a sustained response to steroids or other immunosuppressants. Malabsorption and protein losing enteropathy can account for his low serum albumin and serum IgG level. Combined variable immune deficiency is rare, and would not account for the findings of oligoclonal intestinal T cell expansion. While exocrine pancreatic insufficiency can complicate celiac disease, it is not a prominent feature of type II refractory celiac and does not cause villous atrophy.
This patient with total parenteral nutrition (TPN)-dependency and underlying cholestatic liver disease likely has manganese excess. Manganese excess can occur when too much of the micronutrient is supplemented in TPN over time, and those with cholestatic liver disease are at increased risk. The manganese deposits in the basal ganglia region and causes Parkinsonian-type features. This patient needs to have her manganese level checked, with subsequent reduction of her TPN manganese supplementation. Copper deficiency can cause a microcytic anemia and myelopathy, while copper excess is hallmarked by Wilson's disease. Chromium deficiency can cause hyperglycemia, given it is a co-factor for insulin. Zinc deficiency can cause poor wound healing, visual changes and dermatitis (acrodermatitis enteropathica).

References:

Exocrine pancreatic insufficiency should be considered in the differential diagnosis of a celiac patient with ongoing diarrhea and weight loss. Pancreatic insufficiency has been reported in up to 30% of compliant celiac patients with persistent diarrhea. The mechanism is not clear, but may be at least partly related to gut endocrine dysfunction involving cholecystokinin and peptide YY, both of which are important in regulated exocrine pancreatic function. Pancreatic enzyme supplementation provides long-term relief of symptoms. In this patient, dietary non-compliance seems unlikely based on history, dietician interview, antibodies, and biopsy. A breath test for small bowel bacterial overgrowth was physiologic and treatment with ciprofloxacin was of no benefit, so rifaximin is unlikely to help. There is no role for a probiotic in managing pancreatic insufficiency. With weight loss, symptoms suggestive of steatorrhea, and no abdominal pain, irritable bowel syndrome is unlikely.

References:

While ursodiol is still considered an effective therapy for primary biliary cirrhosis or primary biliary cholangitis (PBC), it is not a recommended therapy for PSC. In fact, studies have suggested increased mortality with the use of ursodiol in high doses in patients with PSC. The latest guidelines now recommend not using ursodiol for PSC and also to stop ursodiol in PSC patients who were previously placed on this medication.

References:

Ischemic colitis is a common condition in the elderly that usually results from local hypoperfusion. In many cases, no cause is identified and the disease is non-occlusive. Ischemic colitis should be suspected on the clinical history, and CT scan with contrast is the imaging modality of choice for those with suspected ischemic colitis. Early colonoscopy is the best test to confirm the diagnosis and should be performed with minimal air insufflation and biopsies can be obtained if there is no evidence of gangrene. Colonoscopy should not be performed in patients with peritonitis. Elevated lactic acid is not required.
for the diagnosis. Antibiotics may be considered for severe disease, but are not required. Angiography is not helpful in the diagnosis or treatment of left-sided ischemic colitis.

Reference:

161. A
Patients with chronic hepatitis B in the inactive phase are individuals who are hepatitis B surface antigen positive, have low (<2,000 IU/mL) HBV DNA and essentially normal ALT. Patients in the inactive phase are at risk for hepatitis flare with intense immunosuppression, including anti-CD20 therapy (e.g., rituximab) or hematopoietic stem cell transplantation. Azathioprine, methotrexate, and low-dose prednisone do not require antiviral prophylaxis.

Reference:

162. D
It is important to clear the colon of synchronous cancers in patients with CRC, prior to resection of the tumor. If a colonoscopy cannot be performed due to obstruction, then a CT colonography should be performed. Once the colon is cleared of other tumors and the CRC is resected, a repeat surveillance colonoscopy should be done at 1 year.

Reference:

163. A
The patient fits the Rome criteria for functional dyspepsia (FD). Typical FD symptoms are early satiation, postprandial fullness, epigastric pain, and epigastric burning. Other symptoms such as upper abdominal bloating, belching, and nausea often coexist. This patient can be further characterized as the post-prandial distress subtype. Nitric oxide is the major neurotransmitter that mediates gastric relaxation. Animal studies have identified a 5-hydroxy-trytamine receptor (SHT1P) on nitricergic enteric neurons. Human studies confirmed the ability of SHT1 receptor agonists to relax the proximal stomach through a nitricergic pathway. Buspirone is a SHT 1A receptor agonist used in the treatment of anxiety. In a dose-dependent manner, this drug was found to relax the proximal stomach and delay gastric emptying of liquids and solids, in healthy volunteers. In a small, randomized clinical trial in patients with functional dyspepsia, buspirone was shown to significantly improve overall symptom severity and the individual symptoms of early satiation, postprandial fullness, and upper abdominal bloating. The therapeutic effect was associated with a slowed liquid gastric emptying and enhanced gastric accommodation. In the recent Functional Treatment Trial, citalopram was no more effective than placebo at relieving pain in functional dyspepsia patients. Metoclopramide would not be recommended, given the already rapid gastric emptying scan.

References:

164. C
This patient is status-post a Roux-en-Y gastric bypass (RYGB) and has had poor oral intake for a month. He now has features of forgetfulness, ataxia and nystagmus, so a diagnosis of thiamine deficiency (beriberi) needs to be considered, and thiamine should be immediately be administered. Thiamine, or vitamin B1, can be depleted from the body very quickly, unlike vitamin B12, which can take years to become deplete. Patients at risk for thiamine deficiency include alcoholics, those with hyperemesis gravidarum, and anyone with poor oral intake, such as after RYGB (referred to as “bariatric beriberi”). Anyone who is at risk for refeeding syndrome would also be at risk for thiamine deficiency. It is key to detect the deficiency early before irreversible cognitive changes result (Korsakoff syndrome), and to administer thiamine before glucose infusion in those at risk, given that glucose administration will further worsen clinical features, as thiamine is a necessary co-factor for glucose metabolism. An MRI of the head or neurology consultation are not needed, and would delay the diagnosis. While these patients may appear to be impaired, thiamine replacement should be initiated before considering other diagnoses like drug abuse.

Reference:

165. D
Answer D is appropriate, as the most likely diagnosis is candida esophagitis, an easily treated, common complication of both achalasia and steroid-based inhaler use. Food impacting the LES or esophageal cancer are also possibilities that should be seen at endoscopy. CT can reveal a malignancy causing pseudoachalasia in the absence of a mucosal lesion, but this patient’s 2-year history rules out that diagnosis (answer A is incorrect). These antibodies are to rule out CREST or scleroderma, 2 unlikely new onset diagnoses in this patient (answer B is incorrect). A POEM procedure may become necessary, but in this high-risk patient, one should seek easier solutions including treatment of candida and BoTox (answer C is incorrect). In a patient with CHF, a calcium channel antagonist may make her heart failure worse (answer E is incorrect).

Reference:
166. C
The concept of nutritional risk incorporates nutritional status and disease severity, as both affect patient outcome and the need for nutritional therapy. Two assessment tools that determine nutritional risk are the Nutritional-Risk Score-2002 and the Nutric Score. Multiple studies show that patients with high nutritional risk who received adequate nutritional therapy had improved outcomes with reduced nosocomial infection and total complications compared to low-risk individuals on sufficient nutritional therapy (answer C is correct). Tools such as Mini-Nutritional Assessment (MNA), the Simplified Nutritional Assessment Questionnaire (SNAQ), the Subjective Global Assessment (SGA), the Malnutrition Universal Screening Tool (MUST), and the Nutritional Risk Index (NRI) are appropriate for non-ICU patients, and have not been validated in the critical care setting (answer D is incorrect). Serum albumin, prealbumin, and transferrin should not be used as markers of nutritional status, but instead should be considered as surrogate markers of risk and level of inflammation. Albumin, prealbumin, and transferrin are all negative acute phase proteins, and will fall in any significant critical illness (answer A is incorrect). Both caloric requirements and protein requirements should be calculated and used to set the goal for nutritional therapy. Recent evidence suggests that protein may be the most important macronutrient when compared to fat and carbohydrate in improving outcomes in the critically ill. It has been recommended that 1.5-2.0 gm/kg/day of protein is the range of protein required to optimize outcomes in critically ill patients (answer B is incorrect). Reference:

167. C
Recent analyses by the U.S. Centers for Disease Control and Prevention (CDC) have confirmed that nearly 75% of all individuals chronically infected with HCV were born between 1945-1965, leading to new recommendations in 2012 for routine birth age cohort screening. Updated NHANES data published in 2014 suggest that the overall prevalence of chronic HCV infection has continued to decline since the 1980s, and as of NHANES V (2003-2010), the prevalence of anti-HCV antibody was 1.3% (3.6 million persons) and prevalence of chronic infection was 1.0% (2.7 million persons), although this may represent an underestimation due to exclusion of high-risk populations in NHANES, including homeless, incarcerated, and institutionalized individuals. Despite a decreasing prevalence, the burden of disease from HCV-infected patients is expected to peak in the next decade, including HCV-associated cirrhosis, liver failure, hepatocellular carcinoma, and liver-related death. Chronic HCV is highly prevalent in sub-Saharan Africa and portions of East and Southeast Asia, and less prevalent in North American and Western Europe. Nearly one-third of HIV-infected individuals in the U.S. also harbor chronic HCV coinfection. References:

168. B
The most common impacted esophageal foreign bodies in adults are meats, and among younger adults, especially males, eosinophilic esophagitis is a very common etiology, accounting for up to half of such presentations (with strictures and stenosis also being common). Historically, guidelines had suggested against blind pushing or advancement of the bolus distally, but evidence from at least 2 large series in >350 patients has revealed no perforations with gentle pressure. If this technique is unsuccessful, proximal extraction with a net or snare would be indicated. In such a situation, intubation and overtube use are likely unnecessary, and would only be appropriate if such gentle efforts were unsuccessful. Dilation can generally be performed safely after a food bolus extraction when a stricture is present to reduce the risk of recurrence, but caution is warranted if EoE is suspected. References:

169. E
Paracentesis is a frequent procedure needed to evaluate for an occult life-threatening infection and for management of ascites in the cirrhosis patient. Bleeding is a rare and unpredictable complication of this procedure. There are no good laboratory tests which are clinically available to predict bleeding risk from paracentesis. The AASLD Practice Guideline on the management of adult patients with ascites due to cirrhosis states that since bleeding is sufficiently uncommon, the routine prophylactic use of fresh frozen plasma or platelets before paracentesis is not recommended. Reference:

170. C
Eosinophilic esophagitis is the most common cause of dysphagia in men in the U.S. The likelihood of this diagnosis is increased by his history of atopy (asthma and eczema). There is no indication for TTS dilation, especially high in the esophagus/pharynx, where you will have an in creased risk of aspiration (answer A is incorrect). A hypopharyngeal bar and small Zenker diverticulum are often of no clinical consequence (answer B is incorrect). This surgery is invasive and should only be considered when other more likely causes have been excluded. While both candida esophagitis and reflux are
considerations, there was no evidence for either seen at endoscopy and thus should be considered only when more treatable diagnoses have been excluded (answers D and E are incorrect).

Reference:

171. **B**

Before the diagnosis of non-celiac gluten/wheat sensitivity can be made, small bowel biopsies and serologies should be obtained to rule out a diagnosis of celiac disease, and skin prick testing or blood IgE levels are required to rule out a wheat allergy. Once these criteria are met, the response to gluten withdrawal has to be evaluated to entertain the diagnosis. Extraintestinal symptoms are frequent in non-celiac wheat sensitivity and are increasingly being recognized as a hallmark of this disease. These extraintestinal symptoms include tiredness, lack of well-being, and neuropsychiatric symptoms such as headache, anxiety, “foggy mind,” arm/leg numbness, depression, and dermatologic manifestations. The majority of patients with NCGS report more than 2 associated gastrointestinal or extraintestinal symptoms, with the most frequent being bloating and abdominal pain (80%). Only 50% report diarrhea. There is strong evidence that non-celiac wheat sensitivity is caused by an innate immune response to wheat proteins, while celiac disease and wheat allergies are TH1 and TH2 cell mediated inflammatory diseases, respectively. Clinically, wheat allergies and FODMAP intolerance are usually characterized by a quick onset of symptoms after ingestion of the offending foods (minutes to a few hours), whereas non-celiac wheat sensitivity has a slower onset, with symptoms appearing hours to a few days after ingestion. The onset of symptoms after ingestion also helps set these entities apart from celiac disease in which symptom onset can take days to weeks after onset of gluten challenge.

References:

172. **E**

There have been several factors in ulcerative colitis that have been associated with an increased risk of requiring a colectomy, including hospitalization, *Clostridium difficile*, cytomegalovirus infection, requirement of steroids, extensive disease, and the presence of deep ulcers. The single most important risk factor associated with severe, disabling ulcerative colitis and the need for colectomy are deep ulcers found on endoscopic evaluation (correct answer E). Nocturnal bowel movements, low-grade fever, anemia, and a mildly elevated CRP are all consistent with active inflammation in ulcerative colitis; however, none have been identified as a distinguishing risk factor for colectomy (A, B, C, D are incorrect).

References:

173. **A**

This patient has acute pancreatitis, most likely due to heavy alcohol ingestion. There are clinical features that may predict a severe course, including systemic inflammatory response syndrome and elevated BUN. His Bedside Index of Severity in Acute Pancreatitis (BISAP) score is 3, which predicts increased mortality. This patient should not be considered for early discharge. Rather, he should be closely monitored for signs of organ failure and considered for ICU transfer if necessary. He has signs of intravascular volume depletion from vomiting and early fluid sequestration, which may contribute to microvascular pancreatic ischemia and lead to necrotizing pancreatitis. Hence, early and aggressive fluids are a central therapy. The ACG guidelines recommend boluses for patients who are hypovolemic, and a rate of 250-500 mL/h for most patients in the first 24-48 hours. The fluid dose must be tailored based on the patient’s age and presence of cardiac, renal, or pulmonary comorbidities. Limited prospective data suggests that Lactated Ringers may be preferable over normal saline. The BUN and urine output should be carefully followed in the first few days as markers of adequate fluid resuscitation. Daily lipase measurements are not helpful in the management of acute pancreatitis, as they do not correlate with recovery or predict severity. Early nutritional support is indeed indicated in clinically severe acute pancreatitis. However, enteral feeding is preferred over parenteral feeding based on lower infection rates, lower cost, and other beneficial outcomes. CT scans should be avoided in the first 2-3 days of symptom onset because they often underestimate or miss the presence of local complications such as pancreatic necrosis and fluid collections.

References:
174. D
The patient has esophageal eosinophilia, defined by >15 eosinophils per high-powered field. Multiple conditions may cause esophageal eosinophilia, including GERD, eosinophilic esophagitis, and proton pump inhibitor-responsive esophageal eosinophilia (PPI-REE). After diagnosis of esophageal eosinophilia, the first step should be a PPI trial (20-40 mg, twice daily) for 2 months, followed by repeat EGD with biopsies. If symptoms and eosinophilia responds to the PPI trial, the patient has PPI-REE.

Reference:

175. E
Following administration of any type of anesthesia, mild liver biochemical test abnormalities are common. The abnormalities almost invariably resolve within days to weeks. Even spinal and epidural anesthesia may lead to transient liver biochemical test abnormalities. The presumed mechanism is a reduction in hepatic blood flow. Clinical consequences are unlikely, except in patients with preexisting liver disease. In this case, the elevations are mild, and the patient is not known to have underlying liver disease. Repeating the liver biochemical tests in 12 weeks is reasonable. In most cases, the elevations resolve.

References:

176. B
Important clinical features of this case include consideration of the patient's CHA2DS2-VASC score of 2, which confers a low risk of 2.2%/year of stroke if not on anticoagulation (1 point for hypertension and 1 point for the history of vascular disease); the fact that he is undergoing a high-risk endoscopic procedure (ERCP), his moderately impaired creatinine clearance of 64 mL/min, and the fact there was some post-sphincterotomy bleeding requiring cautery to assure hemostasis. With a CrCl of 50-80 mL/min temporary interruption of dabigatran for 2-3 days (or 4-5 half-lives; half-life of dabigatran is 13 hours) prior to an endoscopic procedure with a high procedural bleeding risk is appropriate. There was a clinically significant post-sphincterotomy bleed requiring cautery, so it would be appropriate to restart the dabigatran the next day following his procedure with no interim low molecular weight heparin (answer B is correct), given his moderately impaired renal excretion increases the residual anticoagulant effect of his NOAC in the immediate post-procedure period and provides some protection. Since the onset of action of the drug is so fast (1-3 hours), immediate resumption of the drug following post-sphincterotomy bleed may increase the patient’s risk of GI re-bleed (answer A is incorrect). However, there is no need to delay the resumption of the dabigatran beyond the day post procedure (answers C and D are incorrect), as hemostasis was achieved with cautery and the use of the heparin bridge is unlikely to diminish the risk of embolic sequelae, but will likely increase risk of bleeding adverse events.

References:

177. A
Most guidelines now recommend that all patients with H. pylori infection should be tested for cure following a course of antibiotic therapy. Certainly, all patients with a gastric or duodenal ulcer or mucosa associated lymphoid tissue lymphoma should undergo confirmatory testing. Urea breath testing (UBT), fecal antigen testing (FAT), or gastric mucosal biopsy for histology or rapid urease testing are highly accurate means of proving cure of H. pylori infection after antibiotic therapy. Unlike serology, which identifies an antibody reaction to H. pylori infection, both the UBT and FAT identify only patients with active H. pylori infection. Recent use of PPIs, bismuth, or antibiotics can reduce the sensitivity of the UBT and FAT. For this reason, post-treatment testing should be delayed for >4 weeks following antibiotic therapy, and PPIs should be withheld for >1-2 weeks prior to performing these tests. Serology or antibody testing is less accurate than the UBT or FAT either before or after antibiotic therapy. Because antibody tests can remain positive for extended periods after successful eradication of H. pylori infection, these tests are not reliable as a means of proving eradication.

References:

178. C
Biliary sphincterotomy in patients with suspected SOD carries a 25-30% chance of post-ERCP pancreatitis if no prophylactic measures are taken. This risk is lowered to about 10-15% if both indomethacin and a prophylactic pancreatic duct stent is placed, which is recommended in all patients, regardless of whether the pancreas was cannulated. Risks are increased if there is a difficult cannulation, or if there is inadvertent wire or contrast injection of the pancreas. There is currently an ongoing multi-center randomized controlled trial comparing indomethacin alone to indomethacin plus stent placement in high-risk patients.
Eosinophilic esophagitis (EoE) is diagnosed when dysphagia is present along with persistent histologic inflammation following
a course of PPI. First-line treatments include topical steroids (not an answer choice) and specialized diets. The 6-food
elimination diet (milk, wheat, eggs, soy, nuts, and seafood) has been demonstrated to induce a clinical and histologic response
in EoE, although it may be challenging to adhere to for some patients. Of the 6 foods, milk and wheat are the most common

References:
triggers. Addition of an H2 receptor blocker is unlikely to provide additional benefit after a course of PPI. A multi-disciplinary approach to management with an allergist and nutritionist could be beneficial to EoE patients; however, allergy testing with skin prick and atopic patch is generally of low yield in EoE. In 1 randomized controlled trial of the 6-food elimination diet, skin prick testing was predictive in only 13% of patients despite a 70% response to food elimination. Finally, the efficacy of mast cell inhibitors is low, and this medication is not generally recommended as treatment in EoE.

References:

184. D
This diabetic patient has significant evidence of end-organ disease, including peripheral neuropathy and nephropathy. It is highly likely that he is also suffering from the effects of diabetes on his gastric emptying. Diagnosis is based on typical symptoms, absence of mechanical obstruction and evidence of delayed gastric emptying. While the symptoms are consistent with a delay in emptying, similar symptoms may be seen in those with accelerated gastric emptying and with other etiologies, such as peptic ulcer disease. Scintigraphic gastric emptying of solids over 4 hours is the standard diagnostic test. Tests of shorter duration have reduced sensitivity. Despite use of scintigraphy, studies have shown that there is a poor correlation with abnormal scintigraphic results and symptoms of gastroparesis. First-line therapy of patients with gastroparesis includes correction of fluid and electrolyte abnormalities, optimization of glycemic control and lifestyle modification. This should include provision of small, frequent meals that are low in fat and fiber. Both fat and fiber have been shown to delay gastric emptying. While gastric pacing has been shown to improve symptoms, the evidence showing an improvement in emptying has been inconclusive. Regardless, placement of a gastric pacemaker should not be considered until less invasive measures have been tried without success.

Reference:

185. A
A model based on age, ASA class, and MELD score has been shown to correlate nearly linearly with operative mortality. Using this model, the patient’s MELD score is 8, and his 30-day operative mortality is estimated to be 2.4%. Because the patient is undergoing a laparoscopic procedure, the actual mortality rate could be lower. A low serum sodium and low serum albumin would increase the risk. Note that based on the MELD score, the patient’s predicted 5-year mortality rate is 29%. If his MELD score were higher, his operative risk and mortality would be higher. For example, if his non-MELD score were 12, his predicted 30-day operative mortality would be at least 12%, and his predicted 5-year mortality rate would be >70%.

References:

186. B
According to the WHO, the use of “hyperplastic polyp” (A) is acceptable, since there is no known clinical utility to distinguish the subtypes of hyperplastic polyps (microvesicular, goblet cell-rich, mucin-poor). “Sessile serrated adenoma” (SSA) and “sessile serrated polyp” (SSP) are considered synonymous and both are acceptable (C and D). The term “serrated adenoma” (B) without a modifier may be misleading and is discouraged, and should be preceded by the terms “traditional” (E) or “sessile” (C).

Reference:

187. D
This patient has late recurrence of symptoms after a Heller myotomy and a Dor fundoplication. The likely etiology based on the history is a mechanical obstruction related to the fundoplication. An incomplete myotomy would be less likely this far out as the patient had an initially good response and has a tight angulation at the EGJ. The best approach in this patient is to perform a redo operation where the myotomy is redone and the wrap is taken down to relieve any component of mechanical obstruction. A redo fundoplication is not warranted at this point, as this is the likely cause of symptoms and the patient is experiencing significant obstructive symptoms. Although pneumatic dilations are attempted in this situation, they are rarely effective for cases of fundoplication-related issues and may only be helpful if there is an incomplete myotomy. An esophagectomy would be a last resort. The fact that the esophagus is not severely dilated or associated with a “sink trap” appearance suggests that the patient could respond to therapy focused on the LES. Botox would not be helpful as the patient has failed pneumatic dilations and this is unlikely to be a neurogenic issue. POEM would not address the fundoplication and thus, should not be the first-line approach.

References:
188.  D
Urinary ethyl glucuronide can reliably detect alcohol use for the last 2-3 days. ANI is a calculated value that allow to discern the likely alcohol related hepatic steatosis vs. non-alcoholic disease based on simple, readily available parameters, but would not be helpful in this instance. AST/ALT and MCV alterations may not be back to normal in this clinical setting so they cannot reliably help to discern ongoing alcohol abuse.
Reference:

189.  E
Earlier, it was believed that dyssynergic defecation was due to inability to relax external anal sphincter; therefore, myomectomy and botulinum toxin were used to help decrease or relax sphincter pressure. Unfortunately, these approaches provided minimal improvement. Therefore, isolated relaxation of external sphincter is ineffective. A prospective study showed that most patients with dyssynergic defecation failed to coordinate the abdominal, recto-anal, and pelvic floor muscles to facilitate defecation. This incoordination consists of impaired rectal contraction and paradoxic contraction or inadequate relaxation of external sphincter muscle. Also, 50-60% of patients demonstrate impaired rectal sensation (rectal hyposensitivity). Therefore, the goal of biofeedback therapy is to (1.) correct the dyssynergia in coordination of abdominal, rectal, and anal sphincter muscles in order to achieve normal and complete evacuation; (2.) enhance rectal sensory perception in patients with impaired rectal sensation. Restoring recto-anal inhibitory reflex will not provide correction of dyssynergia, whereas restoring strength of anal sphincters and increasing sensory threshold may worsen the dyssynergia.
References:

190.  D
This patient has typical GERD symptoms that are partially responding to once daily omeprazole. While many patients with this presentation are placed on twice-daily proton pump inhibitor (PPI), there are few data to support the practice and certainly none showing a 50% efficacy (answer A is incorrect). Ambulatory pH testing is often used to diagnose pathologic reflux and to monitor the effectiveness of therapy. It would not be the best test in the case because there are no normal data on once daily therapy and it would not likely guide future therapy (answer B is incorrect). Breakthrough nighttime symptoms are common on once daily PPI therapy, but taking omeprazole at bedtime would not be optimal (answer C is incorrect). It is possible that taking the once daily dose prior to the evening meal might provide better night control. Finally, although not proven in randomized controlled trials, pH studies would suggest better gastric acid control with twice daily PPI dosing (answer D is correct).
References:

191.  B
Normally, the osmolarity of stool is similar to plasma (275-295 mOsm/kg H2O) so this low osmolarity suggests that the stool has been diluted, probably with hypotonic urine or water. This can be accidental or volitional (factitious diarrhea). Urea can be measured to confirm this hypothesis. The calculated osmotic gap is 290 – 2x (30 +70) is 290-200 = 90, which is not the low gap (less than 50) that you would see with a secretory diarrhea, such as a gastrin producing tumor or idiopathic secretory diarrhea. Small intestinal bacterial overgrowth would also not fit with this finding, as it would more likely be an osmotic diarrhea.
References:

192.  B
Approximately 80% of patients with PSC will have coexisting inflammatory bowel disease. Liver biopsy typically shows non-specific findings and the diagnosis of PSC is established by MRCP or ERCP. Ursodeoxycholic acid has been shown in randomized controlled trials to not reduce the incidence of cholangiocarcinoma. Stenting of the bile duct has been shown to improve jaundice in patients with dominant biliary strictures but does not improve survival.
Reference:

193.  C
Clostridium difficile infection is one of the leading causes of hospital-acquired infections. Rates have been increasing especially in the elderly and patients in long-term care facilities. Two main risk factors are exposure to antibiotics and the
organism. While acid suppressive therapy has been associated with an increased risk of *Clostridium difficile*, his history of recent bleeding peptic ulcer likely favors continuing his proton pump inhibitor. Probiotics have resulted in fewer recurrences in some groups with recurrent *Clostridium difficile* infection, but the quality of the evidence is poor. As antibiotics are the greatest risk factor for infection, antibiotic stewardship is recommended. Given his sinus symptoms are improving, observation and withholding antibiotics is the best step for this patient. Routine screening for *C. difficile* in patients without diarrhea is not recommended.

Reference:

194. D
This patient has such a large amount of acid secretion that he will require high doses of PPI to control the acid. Because of the large amount of acid, he has developed a severe peptic stricture. The stricture is not allowing for his PPI in pill form to be absorbed reliably into the stomach; therefore, it would be prudent to change formulations of the PPI to a sublingual tablet or powder form. Once acid suppression is achieved, the ulceration in the esophagus should improve, and in turn, this will allow for safer dilation. Dilating from 5 mm to 13 mm in 1 session, especially in the setting of active ulceration, is not recommended due to the risk of perforation. An H₂ blocker may help in controlling the acid, but tachyphylaxis may develop. A PPI should be the mainstay of treatment in gastrinoma. Esophagectomy is rarely, if ever, the treatment for benign esophageal strictures.

References:

195. C
This is a serous cystadenoma. These are more common in female patients and often present incidentally. Serous cystadenoma is a benign lesion; therefore, no further follow-up is needed. Transformation to serous cystadenocarcinoma has been described, but is very rare. Enlargement of the cyst can eventually cause symptoms and if so, this would be indication for surgical resection. This patient is asymptomatic so surgical resection is not appropriate. If the mass has a characteristic appearance, especially with the central stellate scar, no further evaluation is needed. If EUS is performed and confirms characteristic appearance, no fine needle aspiration is necessary. MRI with MRCP can be helpful in other pancreatic cysts, such as intraductal papillary mucinous neoplasm and mucinous cystadenoma, but it is not likely to add any information in this particular case.

Reference:

196. D
Infliximab, particularly at higher dose of >5 mg/kg, should be avoided in patients with moderate to severe congestive heart failure (NYHA Class III/IV). In patients with mild to moderate heart failure (NYHA class II), consultation with the patient’s cardiologist is recommended. Other contraindications to infliximab include hypersensitivity to infliximab or any component of the formulation and untreated latent tuberculosis. Advanced age, diabetes, chronic kidney disease, and azathioprine-induced pancreatitis are not contraindications to infliximab.

Reference:

197. D
Patients with PSC and worsening liver function should be considered for liver transplantation. The ACG guidelines recommend referral to a liver transplant center to be initiated when the MELD score becomes >15. This patient's MELD score is 19 and therefore referral is indicated. High-dose ursodeoxycholic acid at 28 mg/kg/day is not recommended and the ACG guideline states that it should not be used. Bile duct stent placement and brushings are indicated only if a dominant biliary stricture is present.

Reference:

198. A
Gastroparesis is suggested by the constellation of symptoms and history of long-standing diabetes; however, new-onset symptoms, including weight loss in a patient over the age of 50, would be considered alarm findings and mandate directed evaluation. Gastric physiology studies would be appropriate if his endoscopy was unremarkable and concern for gastroparesis was high. Solid scintigraphy is believed to be more sensitive than liquid scintigraphy and would be the most appropriate first test to look at gastric motility. However, given the patient’s age, new symptom onset, weight loss, and smoking history, upper endoscopy would be the most appropriate next step in this particular case.

Reference:
199. B
The immune-tolerant phase of chronic hepatitis B is a highly replicative, low inflammatory state characterized by high hepatitis B DNA levels and normal ALT. The immune-tolerant phase does not require antiviral therapy. Due to the dynamic nature of chronic hepatitis B, ALT should be tested at least every 6 months in immune-tolerant adults to monitor for potential transition to immune-active or inactive hepatitis B. Liver biopsies are not required to make treatment decisions. HCC surveillance for Asian women should start at about age 50.

References:

200. B
van Nood et al. conducted a prospective, randomized trial comparing FMT with bowel lavage to vancomycin, either alone or with bowel lavage. The study findings strongly favored FMT (81% cure) above vancomycin alone (31%, P<0.001) or with lavage (23%, P<0.001). The trial was prematurely ended by its data safety monitoring board because of the dramatic difference in outcomes between the 2 treatment arms. This trial’s finding that FMT was highly effective in patients with multiple recurrences of CDI is consistent with a systematic review of uncontrolled case series and case reports of FMT therapy for CDI in which a similar overall response rates is reported.

References:

201. E
This patient has severe alcoholic hepatitis (discriminant function = 57). The STOPAH trial was a multicenter, double-blind, randomized trial designed to evaluate the effect of treatment with prednisolone and pentoxifylline with a primary endpoint of 28-day survival. Patients with severe alcoholic hepatitis were randomly assigned to 1 of 4 groups: prednisolone + pentoxifylline, prednisolone + pentoxifylline-matched placebo, prednisolone-matched placebo + pentoxifylline, prednisolone-matched placebo + pentoxifylline-matched placebo. The conclusions of the study were that pentoxifylline did not improve survival and prednisolone was associated with a reduction in 28-day mortality that did not reach significance, with no improvement in outcomes at 90 days or 1 year. Other studies have shown that corticosteroids + N-acetylcysteine (NAC) may reduce short-term mortality in severe alcoholic hepatitis, but NAC was not studied as part of the STOPAH trial.

Reference:

202. C
One major change in the diagnosis of IBS in the Rome IV criteria, in contrast to Rome III, is the recommendation that simple laboratory studies be performed, if not previously done. A complete blood count (CBC) should be ordered, as the finding of anemia or an elevated white blood cell count warrants further investigation. A C-reactive protein (CRP) or fecal calprotectin should be measured, as a systematic review and meta-analysis showed that these tests are helpful in excluding patients with inflammatory bowel disease (IBD) with symptoms suggestive of non-constipated IBS. If inflammatory markers are mildly elevated but the probability of IBD is low, then tests should be remeasured before performing colonoscopy (if no other indication for colonoscopy exists). Inflammatory markers, including fecal calprotectin, may not be useful in patients with constipation features. Routine thyroid tests are not indicated in all patients, but can be checked if clinically warranted. Serologic tests for celiac disease should be performed in patients with diarrhea-predominant IBS and mixed-type IBS who fail empiric therapy (these do not need to be performed in all IBS patients). Upper gastrointestinal endoscopy with duodenal biopsies should be performed if serologic tests for celiac disease are positive or if clinical suspicion is high; duodenal biopsies can also be used to identify tropical sprue, which can mimic IBS symptoms. Stool analysis (bacteria, parasites and ova) may be useful if diarrhea is the main symptom, especially in developing countries where infectious diarrhea is prevalent.

Reference:

203. B
The patient has developed diuretic-resistant ascites. Treatment of diuretic resistant or refractory ascites includes serial large volume paracentesis or TIPS. Her cirrhosis is too decompensated to consider TIPS with a total bilirubin greater than 3 mg/dL, and high MELD score (in this case, 27). In this case, increasing diuretics would likely worsen her hyponatremia and kidney injury. Abdominal catheters are fraught with complications including infections. In this case, the safest and most effective therapy is serial paracentesis with IV albumin replacement given the renal insufficiency. Also, if she is an appropriate candidate, she should be referred to a transplant center.

Reference:
This patient presents with a borderline resectable pancreatic cancer with the tumor touching the superior mesenteric artery (SMA) less than 180 degrees. If the tumor encircles the SMA more than 180 degrees, the tumor would be classified as unresectable. If this patient undergoes immediate surgery, the resection margin will be undoubtedly positive. Margin-positive resection has a significantly shorter survival when compared with margin negative resection. Therefore, the patient should be considered for neoadjuvant treatment hoping to reduce the tumor burden, thus detaching the tumor from SMA since SMA cannot be surgically reconstructed. The rationale of neoadjuvant treatment in this setting includes:

- It provides early treatment of micrometastatic disease.
- Primary tumor is intact and relatively well perfused.
- It avoids surgery in patients with rapidly progressive disease.

In a study of 160 patients with borderline resectable pancreatic cancer, 125 (78%) completed preoperative therapy and restaging, and 66 (41%) patients underwent pancreatectomy. Of 66 patients, 62 (94%) had a margin-negative resection, and their median survival was 40 months.

References:

205. C

It is important for women with Crohn’s disease who are planning pregnancy to maintain good disease control to optimize pregnancy outcomes. Medication risks in pregnancy should be considered for Crohn’s patients who are planning pregnancy. Medications which are FDA pregnancy Category X are contraindicated in pregnancy and this includes methotrexate. 6-mercaptopurine is Category D and may be used if the benefits of treatment outweigh the risks. Infliximab and vedolizumab are Category B.

Reference:

206. A

The correct answer is A. Answer B is incorrect – size alone should no longer determine the need for resectability. Answer C is incorrect – elevated cyst fluid CEA greater than 192 ng/mL demonstrates the greatest area under the curve (0.79) for differentiating mucinous vs. non-mucinous cystic lesions, but does not determine if a cyst has malignant or non-malignant characteristics. Answer D is incorrect – patient anxiety alone should not drive the need for operative intervention.

References:

207. D

Patients with primary sclerosing cholangitis (PSC) have a 4-fold increase risk of colorectal cancer compared to patients with ulcerative colitis alone. The risk of colitis-related dysplasia in patients with Crohn’s colitis affecting more than one-third of the colon is considered to be similar to the risk in patients with ulcerative colitis. The risk of colitis-related dysplasia is not increased in patients with a remote family history of colon cancer or Crohn’s disease of the ileum.

References:

208. D

A proximal colon cancer in a young individual should raise the suspicion for a genetic cause of the cancer. The most common hereditary colorectal cancer syndrome resulting in young onset proximal colon cancer is Lynch syndrome (LS). The operative approach to surgical management of colon cancer due to LS differs from that for sporadic cancer. If the underlying cause of this patient’s tumor is LS, an extended colon resection is recommended to decrease the high cumulative risk of metachronous colon cancer. A segmental colectomy would be indicated for a sporadic colon cancer. While genetic counseling is recommended for a young individual with colon cancer, germline genetic test results can take weeks to return and won’t inform the surgical approach. This symptomatic patient needs surgery more urgently. A lack of family history does not exclude a hereditary syndrome such as LS as the genesis of the tumor. Guidelines endorse that all newly diagnosed colorectal cancers undergo testing for DNA mismatch repair (MMR) deficiency. This is called universal testing. The diagnosis of LS requires molecular testing for evidence of MMR deficiency. In this case, since preoperative biopsies of the tumor are available, immunohistochemistry (IHC) or microsatellite instability (MSI) testing for MMR deficiency should be requested before surgery.

One study demonstrated that 100% of adenomas >10 mm from LS patients showed evidence of MMR repair with both IHC and MSI. Generally, if evidence of MMR deficiency is noted in the tumor, an extended colectomy should be considered.
209. C

A number of studies have demonstrated an increased risk of infection and mortality with the use of steroids. In the TREAT registry, the use of steroids was associated with a 1.97 increased risk of mortality. The other agents associated with increased mortality are narcotics which have an 1.88 increased risk of death. In the TREAT registry, anti-TNF agents (infliximab) were not associated with an increased risk of mortality.

Reference:

210. E

This woman most likely has autoimmune enteropathy (AIE), which is a rare condition characterized by significant diarrhea, weight loss, and histologic changes on small intestinal biopsy (villous blunting, apoptotic bodies, lymphocytic infiltration, presence of plasma cells, absent goblet or Paneth cells). While patients may have anti-enterocyte or anti-goblet cell antibodies, they are not included as diagnostic criteria. For most patients, immunosuppressive medications are needed for treatment. IPEX (immunodysregulation polyendocrinopathy enteropathy X-linked syndrome) and APECED (autoimmune phenomena, polyendocrinopathy, candidiasis, and ectodermal dystrophy) are systemic forms of AIE. The negative IgA TTG and the histologic findings would make celiac disease unlikely. Patients with combined variable immunodeficiency (CVID) typically have a paucity of plasma cells noted in small bowel biopsy samples. Those with small intestinal bacterial overgrowth (SIBO) may have similar symptoms, but the histology noted in this case should not be seen in patients with SIBO.

Reference:

211. C

This patient likely has psoriasis associated with anti-TNF therapy that occurs with all of the anti-TNF agents. The most common sites of involvement are the palms and feet in 42% of patients and often leads to discontinuation of treatment.

References:

212. C

Per the 2016 ACG Guidelines, "pregnant women presenting with acute hepatitis should be tested for common etiologies of acute liver injury including viral hepatitis HAV, HBV, HEV and HSV." Patients with HSV hepatitis may present with fever, rash, upper respiratory symptoms, and labs consistent with anicteric severe hepatitis. While mucocutaneous lesions may be seen, these are present in less than 50% of patients. The sensitivity and specificity of HSV IgM is low, and therefore HSV PCR should be performed when HSV hepatitis is suspected. As the diagnosis of HSV is difficult to make and may be delayed while awaiting PCR results, empiric acyclovir should be started as soon as HSV is suspected. Overall mortality from HSV hepatitis is high, but early treatment with acyclovir is associated with improved outcome.

Reference:

213. A

The risk of recurrence from population-based studies of hospitalized patients is 15-20%. NSAIDs are the most consistently identified risk factor for diverticular complications (relative risk 1.5-3) and should be minimized in individuals with a history of diverticulitis if possible. Although it is hypothesized that disruptions in the gut microbiota may play a role in diverticulitis, data on the use of probiotics to prevent recurrence are very limited and do not suggest a benefit. Randomized trials of mesalamine for the prevention of recurrent diverticulitis have found no benefit in terms of reducing recurrence. Historically, individuals with diverticulosis have been instructed to avoid nuts and seeds out of concern that these foods could lodge in a diverticulum and result in microperforation or bleeding. However, data from a large, prospective, well-characterized cohort found no association between intake of nuts, corn or popcorn and incident diverticular complications. In fact, men who consumed the most nuts and popcorn were at a decreased risk of diverticular complications.

References:

214. D
This alcoholic patient presents with large ascites. He would obviously be at risk for alcoholic liver disease and even cirrhosis. However, the characteristics of his ascites are not consistent with alcoholic cirrhosis. He has a low SAAG (serum-ascites albumin gradient) and a high protein in the ascites. These are worrisome for other disease processes (most notably TB or cancer). He lives in homeless shelter and would be at high risk for exposure to TB. Also, patients with underlying alcoholic liver disease and/or cirrhosis could be at risk for TB peritonitis. The best test listed would be to proceed to a referral for possible diagnostic laparoscopy to assess the peritoneum for TB or malignancy.

References:

215. D
This patient with collagenous colitis responded well to budesonide, but symptoms recurred after stopping it. Recurrence after discontinuation of budesonide is common, occurring in ~70% of patients. Since she just had a colonoscopy 3 months ago and her current symptoms are similar to the symptoms she experienced at the time of diagnosis, a repeat colonoscopy with biopsies is not indicated. In addition, since she has no weight loss and responded completely to budesonide, there is no need to consider a diagnosis of celiac sprue, and therefore an EGD with small bowel biopsies is not indicated. Azathioprine is an option for budesonide-refractory cases, or those with intolerable side effects. However, due to the risk of side effects from azathioprine, most clinicians use budesonide maintenance therapy rather than azathioprine in patients like this. Budesonide, 6 mg/d, has been studied in 2 randomized clinical trials and found to be superior to placebo for maintenance therapy. Once response is reestablished, many clinicians will taper the dose to 3 g/d or even 3 mg every other day in order to minimize side effects from long-term budesonide.

References:

216. D
Ursodeoxycholic acid has not been shown to be effective in treating PSC in any dose. The development of cholangiocarcinoma is independent of the duration of PSC or inflammatory bowel disease. CA 19-9 is not a sensitive marker for cholangiocarcinoma. The median survival of patients with PSC is only 3-6 months.

References:

217. D
The question addresses the idea of how often hepatitis C is undiagnosed. This has major implications regarding the ability to diagnose and thus treat hepatitis C patients. With the availability of new medications with excellent cure rates and low side effect rates, it is essential to diagnose such patients and give them the opportunity to be considered for hepatitis C therapy.

Reference:

218. D
In a review of the safety data from 6 vedolizumab trials including 2,830 patients, there was no increased risk of malignancy or serious infections. There were no cases of PML in this cohort and testing for the JC virus is not required or recommended.

Reference:

219. A
This patient is at increased risk for CRC and should be screened with colonoscopy starting at age 40. She meets the ACG guideline definition of increased risk. First, she has 2 first-degree relatives who had CRC or advanced adenoma. An advanced adenoma must satisfy at least one of the following criteria: size ≥1 cm, high-grade dysplasia, or villous component. Second, the patient has a first-degree relative with CRC or advanced adenoma diagnosed before age 60. Meeting either criterion satisfies the definition of a positive family history and thus screening should be performed with a colonoscopy beginning at age 40, or 10 years before the diagnosis in the youngest affected relative (whichever is earlier). The guidelines also recommend that average-risk African Americans begin CRC screening at age 45.
220. B
HLA-DQ2/DQ8 haplotyping would be the recommended next step for this patient. The patient has non-specific gastrointestinal symptoms that improved after institution of a gluten-free diet. Therefore, celiac disease is high on the differential diagnosis. HLA-DQ2/DQ8 testing is the next best step since the patient has been on a gluten-free diet over the past year, given the sensitivity of serologic titers and histologic findings is reduced if performed on a gluten-free diet. HLA-DQ2/DQ8 testing should be used in this case to help rule out celiac disease, as it has a high negative predictive value (>99%). However, if HLA-DQ2/DQ8 testing is positive, it does not confirm the diagnosis of celiac disease, as positivity is noted in up to 30% of the Caucasian population. If positive, then a formal gluten challenge followed by small bowel biopsies and celiac serologies is the next best step. Continuing a gluten-free diet is not the ideal approach, even if the patient has improvement in symptoms, as this can lead to dietary restriction without a confirmed diagnosis of celiac disease.

Reference:

221. D
While there is no published controlled trial that looked at an approach to primary non-responders to infliximab, at least one-third of patients do not respond to induction with infliximab, so this is an important scenario. The presence of high titers of infliximab in the serum suggest that the drug is indeed present, but the patient’s persistent inflammation and symptoms support that this mechanism of control is unlikely to be helpful (options A, B, and C are incorrect). In such patients, other mechanisms of management are appropriate considerations. This may involve other medical options, like anti-integrin therapies (vedolizumab), but surgery should also be considered.

References:

222. C
Given that this patient with chronic hepatitis C virus infection and likely cirrhosis is now found to have an arterial enhancing lesion greater than 1 cm that washes out on CT scan, he can receive a diagnosis of hepatocellular cancer (HCC). He does not require another repeat diagnostic modality, such as liver biopsy. This patient is a Child’s-Pugh Class A cirrhotic. Since he has a single lesion less than 5 cm, he could be a candidate for resection, radiofrequency ablation (RFA) or liver transplantation, which can be curative. Sorafenib is generally reserved as a palliative treatment for patients with very advanced, non-curable HCC.

Reference:

223. D
The 2015 Quality Indicators for Colonoscopy document suggests a target of ≥30% ADR for males, ≥20% for females, and a combined target of 25%. This is a minimum target for performance and many colonoscopists have an ADR well above this level. The combined ADR is a 2016 outcome QCDR measure in the GIQuIC registry.

References:

224. A
Pouchitis, Crohn’s disease (CD) of the pouch, and cuffitis are the 3 most common inflammatory complications of the ileal pouch. Irritable pouch syndrome (IPS) is the most common functional disorder of the pouch. The symptomatology of these inflammatory and functional disorders of the pouch largely overlaps. However, bleeding is considered a hallmark for cuffitis, and is rarely seen in pouchitis, CD of the pouch, and IPS. Classic cuffitis is regarded as a form of reminiscent ulcerative colitis (UC), as the stapled anastomosis without rectal mucosectomy is the current standard procedure for the ileal pouch surgery. Approximately 2-2.5 cm of rectal mucosa is left in place. Periodic flare-ups of cuffitis, similar to that in UC, are encountered. The first-line therapy for cuffitis is topical mesalamines, followed by topical corticosteroids.

References:
225. B
With the typical CT appearance, high CA 19-9 and normal IgG4, the most likely diagnosis is a resectable pancreatic adenocarcinoma. A preoperative tissue diagnosis is not necessary before proceeding to resection of a resectable mass. A bilirubin of 7.5 mg/dL is not a contra-indication for surgery in the absence of cholangitis. In a randomized trial, placement of a bile duct stent prior to surgery (in the absence of cholangitis) was inferior compared to proceeding directly to surgical resection. More surgery-related complications were observed in the group that received biliary stent with no change in length of stay or mortality. While some institutions routinely treat these patients with neo-adjuvant therapy (especially if CA 19-9 is high), standard treatment for clearly resectable pancreatic cancer in the head is Whipple’s procedure. Radiation is used to palliate pain and she has no pain at the time of presentation.

Reference:

226. B
The AASLD suggests antiviral therapy to reduce the risk of perinatal transmission of hepatitis B in all HBsAg-positive pregnant women with a HBV DNA level greater than 200,000 IU/mL. In most studies, anti-viral therapy is initiated between 28-32 weeks of gestation. Antiviral agents, which have been studied and shown to be safe in pregnancy, include lamivudine, telbivudine, and tenofovir. The safety of entecavir use in pregnancy is unknown. Breast feeding is not contraindicated in patients with hepatitis B, and routine C-section is not indicated.

References:

227. A
Clostridium difficile is a common infection in patients with inflammatory bowel disease. The development of C. difficile in patients with ulcerative colitis often leads to a more refractory disease course with higher rates of hospitalization and surgery (correct answer A). Anthypertensive medications, a family history of IBD, peripheral arthritis, and mesalamine have not been associated with an increased risk of colectomy in ulcerative colitis (answers B, C, D, and E are incorrect).

References:

228. C
This patient has unexplained iron-deficiency anemia requiring yearly transfusions. Further evaluation for a source of the anemia should occur. Enterography examinations with CT or MRI should be considered to be the next step after a negative VCE examination to evaluate for the presence of submucosal lesions that would not be visualized by VCE or enteroscopy. This patient underwent a CT enterography that demonstrated a submucosal gastrointestinal stromal tumor (GIST). Repeat video capsule endoscopy (VCE) is an option in order to exclude a missed small bowel lesion. The miss rate for initial VCE examinations has been described to be approximately 30-40% due to the limited field of view of current VCEs. Studies have demonstrated yields of 50-75% for small bowel lesions when the capsule is repeated. The yield of a second VCE examination is increased in the setting of an acute drop in the hemoglobin value and/or the presence of overt bleeding, neither of which this patient has at this time. A 2008 meta-analysis demonstrated that the diagnostic yield of VCE and deep enteroscopy were equivalent. Therefore, deep enteroscopy should not be performed in the setting of a normal VCE examination unless a small bowel source is strongly suspected. Intraoperative enteroscopy has been replaced by deep enteroscopy and is no longer indicated unless a patient requiring deep enteroscopy has extensive adhesions requiring therapy in order to advance the enteroscope.

References:

229. E
Her correct diagnosis, even before her cholecystectomy, was likely functional abdominal pain syndrome. Now that she is on chronic narcotics, this may be complicated by narcotic bowel syndrome. Mild elevations of lipase are of no clinical significance. Since her bile duct is non-dilated and her liver enzymes are normal, she could have been classified historically as type III SOD although we now know that there is no evidence for that entity. Treatment should be aimed at weaning her off narcotics and dietary and medical management of her functional abdominal pain.

References:
230. C  
The initial approach to a patient with functional dyspepsia includes a test and treat strategy for H. pylori or an empiric course of PPI. This will generally depend on the pretest probability of H. pylori in the population. If the pretest probability is low, then a PPI approach may be a better option to start. If these 2 options fail to improve symptoms, buspirone has been shown in a small randomized cross-over study to improve overall dyspepsia symptoms. Buspirone is a 5-hydroxytryptamine receptor antagonist. Its mechanism of action is via increasing fundic accommodation, which is believed to play a role in the development of symptoms of dyspepsia, such as bloating and early satiety.  
References:  

231. C  
This is a classic presentation for acute fulminant Wilson disease. The constellation of a Coombs-negative hemolytic anemia, acute liver failure and the age of the patient all point to this diagnosis. The relatively low alkaline phosphatase is also another diagnostic clue to Wilson disease. The ceruloplasmin is falsely elevated into the low normal range due to an acute phase response. The serum iron studies are increased because of release of iron from the liver. Liver biopsy may demonstrate increase copper concentration because of the relatively high serum bilirubin level. A positive slit lamp exam would confirm the diagnosis of Wilson disease. Since the slit-lamp exam may be negative, urine copper should be measured simultaneously although the results may not be immediately available. Patients should be considered early for possible liver transplantation. Several prognostic indices have been developed for Wilson disease. The iron studies are a red herring and reflect release of ferritin and iron stores from the liver due to acute liver injury and the patient will not tolerate phlebotomy due to anemia. Genetic testing for Wilson disease is rarely done and can be misleading due to multiple genetic abnormalities demonstrated in Wilson disease. Interferon would have no role for this patient with fulminant Wilson disease.  
References:  

232. D  
The most likely diagnosis is sphincter of Oddi stenosis or choledocholithiasis; she has both a dilated bile duct and significantly elevated liver enzymes associated with typical biliary pain. She should have a biliary sphincterotomy. Manometry is not indicated in this case. Proceeding to cholecystectomy without better defining the biliary issue would not be recommended, given the patient does not meet enough criteria to directly proceed with a surgical approach.  
References:  

233. B  
The patient is now 15 years post liver transplant and has one of the primary long-term complications of calcineurin inhibitors: chronic kidney disease. The tacrolimus blood level is higher than it needs to be 15 years following a liver transplant, especially with no recent history of graft rejection. The first medical maneuver would therefore be to lower the dose of the calcineurin inhibitor which will hopefully improve the renal function. Another alternative might be to convert the patient’s immune suppression from tacrolimus to sirolimus after a call to the liver transplant center. HCV can be treated after a liver transplant. Several oral anti-viral agents for HCV have been shown to be effective. Sofosbuvir and ledipasvir do not affect tacrolimus levels, while other anti-HCV drugs (especially protease inhibitors) do and would require dose modification of tacrolimus. Sofosbuvir is cleared by the kidney and should not be utilized in patients with a GFR less than 30 cc/min. Given the elevation in serum creatinine, this patient’s GFR is already below 30 ml/mkin, and therefore attention to the tacrolimus dose will be needed before he can be treated with sofosbuvir.  
References:  

234. A  
Early initiation of enteral nutrition (24-36 hours of admission to the ICU) is associated with significantly reduced infection rate, length of hospital stay, and mortality compared to feedings started after that point (delayed feeding). This is particularly true in patients who are at high nutritional risk (answer A is correct). Potential benefits of enteral nutrition (EN) over parenteral (PN)
have been suggested by multiple meta-analyses in a wide range of critically ill patients to include patients with pancreatitis. These studies have shown an association with reduced infection, decreased total complications, and shorter length of hospital stay with EN compared to PN. Recent studies have used a more conservative delivery of calories to decrease metabolic complications, and have also concentrated on reducing infectious and thrombotic complications by strict adherence to protocols. These studies have shown that the difference in morbidity between EN and PN may not be as significant as previously believed. However, in general, PN should only be used when EN is not feasible (answer D is incorrect). EN is contraindicated in patients with bowel obstruction, uncontrolled peritonitis, and ischemic bowel. Some conditions like ileus, open abdomen, recent surgical anastomoses, GI bleeding, and bowel edema, are relative contraindications of EN, but EN may still be used with caution in these situations. Pancreatitis is not a contraindication to enteral feeding, and a nasojejunal tube can be placed to limit pancreatic stimulation (answer B is incorrect). In a patient at low nutritional risk, provision of EN or PN is unlikely to change clinical outcome. A clinical assessment that indicates a well-nourished individual at low nutritional risk, and is expected to resume volitional intake within 5-7 days following admission is unlikely to benefit from nutritional therapy. This patient is malnourished with severe illness, and is not expected to have oral intake for over a week, so he would benefit from nutritional therapy (answer C is incorrect).

Reference:

235. D
The risk of developing CRC through the serrated pathway parallels the number, size, type, and anatomic distribution of the serrated polyps. Recent consensus guidelines highlight the risk stratification of serrated polyps based on these factors, and make surveillance recommendations accordingly. The risk is higher with increasing size, number, SSA/P histology (as opposed to hyperplastic polyp), and proximal location; hence, answer D is correct. Answer A describes the lowest risk scenario, as diminutive rectosigmoid hyperplastic polyps are benign lesions.

Reference:

236. B
The new name for primary biliary cirrhosis is primary biliary cholangitis. The name was changed because many patients with PBC do not have cirrhosis and with treatment, may never develop cirrhosis. Obeticholic acid (OCA) has recently been approved by the Food and Drug Administration for the treatment of patients with PBC who have not had normalization or near normalization (ALP >1.5 x ULN) in ALP after at least 6 months of treatment with ursodiol. This patient is therefore a candidate for having OCA added to her medical regimen. Approximately 50% of persons with PBC will respond with normalization or near normalization in ALP when OCA is added to URSO. The proper dose of ursodiol for treatment of PBC is 15 mg/kg. Increasing the dose beyond this has no additional benefit in treating PBC. The patient is already taking 15 mg/kg of ursodiol and her weight has not increased sufficiently to warrant an increase in the dose. There is no reason to suspect bile duct disease in this patient with well documented PBC and a normal bilirubin. The liver biopsy can be repeated to see if she has developed fibrosis progression but this would not change the need to add OCA in this patient who has failed to achieve the desired response to treatment after 5 years of ursodiol.

References:

237. B
Discontinuation of maintenance therapy has been shown to be possible in stable patients who have documented deep remission. This includes normal labs and a healed bowel, which is associated with preferred outcomes in this regard. Any plan to discontinue therapy should be prepared with a monitoring strategy and rescue strategy for follow-up. There is no evidence to support switching azathioprine to mesalamine in this situation, and monitoring anti-drug antibodies after discontinuation of the therapy is not appropriate.

References:

238. E
This patient has Child A cirrhosis, small varices, with increased risk for bleeding due to high risk stigmata but has not had variceal bleeding in the past. He is maintained on non-selective beta-blockade with good heart rate control. The 2007 AASLD Practice Guidelines for prevention and management of gastroesophageal varices state that patients with small varices who have not bled and receive beta-blockers do not need a follow-up endoscopy unless there is evidence of further hepatic decompensation.

Reference:
The addition of a contrast agent (indigocarmine, methylene blue) to the submucosal fluid injection is critical to ensure complete resection of large serrated polyps. The contrast demarcates the border of the lesion, and allows the endoscopist to secure a clear resection margin. The high rate of incomplete resection of large serrated polyps in the CARE study (48%) may have been partly due to use of standard hot snare resection techniques. Most large serrated polyps can be effectively and safely removed using EMR, as they are more loosely attached to underlying layers than adenomas of corresponding size. A spiral (stiff) snare facilitates resection in most cases. In general, mechanical resection is preferred to thermal ablation for visible raised polyp tissue, to decrease the risk of incomplete resection.

References:

This patient presents with a classic picture of hepatocellular carcinoma. The imaging studies are considered diagnostic (early hypervascularization with washout in the portal venous phase), especially with his history of cirrhosis and with an elevated AFP level. Thus, liver biopsy is not needed or recommended. With his advanced liver disease and a liver cancer fitting within the Milan criteria (and thus eligible for MELD upgrade exception points for hepatocellular carcinoma), he should be referred for liver transplant. Surgical resection would not be appropriate in this patient with advanced (Child’s B) liver disease, as he would be at risk for post-op decompensation. He might eventually be referred to radiology for treatment options such as chemoembolization or radioembolization after being listed for liver transplant (to prevent tumor growth beyond the Milan criteria).

References:

Her presentation and test results indicate the need to consider alternative etiologies, other than celiac disease, for her persisting symptoms. The findings of normal serologies and normal histology in a patient who understands and follows the gluten-free diet are strong indicators that celiac disease is no longer active. Hence, other causes for her symptoms should be sought, such as food intolerances (e.g., lactose or fructose), bacterial overgrowth, or irritable bowel syndrome. The combination of positive celiac-specific serologies (TTG and DGP) and villous atrophy on small bowel biopsy make a diagnosis of celiac disease near certain. Hence, gluten challenge or HLADQ2/DQ8 testing are not likely to be helpful. A diagnosis of type I refractory celiac disease requires the presence of persisting villous atrophy in addition to severe symptoms.

References:

The patient has symptoms and serology that are consistent with primary biliary cholangitis (PBC). Patients with PBC can develop several extrahepatic manifestations. These include accelerated osteoporosis, hypercholesterolemia, sicca syndrome, and rheumatoid arthritis. Patients with PBC also experience itching. Patients with PBC are not at increased risk to develop colon cancer or IBD, and so colonoscopy at a young age is not indicated. The patient has no evidence of cirrhosis and no symptoms of upper GI tract disease; therefore, an EGD is also not indicated at this time. Measuring bone density is important in women with PBC because of the risk of accelerated osteoporosis. Although the patient has an elevation in ALP, the total bilirubin is normal and the AMA is positive. There is therefore no medical indication to perform an MRCP unless an ultrasound suggested bile duct disease.

References:

Selecting patients with proper indications for ERCP is critical to reducing adverse event rates, especially post-ERCP pancreatitis. The patient with an elevated bilirubin 1 week after a cholecystectomy likely has a biliary injury, a retained stone, cholangitis, or a combination of these, all of which would warrant an ERCP. The patient with PSC may chronically have some mild elevation of their bilirubin. The patient with the pseudocyst has a small lesion that may resolve spontaneously. The patient with pneumonia likely has cholestasis from sepsis and, in the absence of other evidence of biliary disease, should have their primary infection treated first as the cholestasis may resolve on its own.
Hypokalemia and although these labs should be monitored and corrected, they are not a concern for using cyclosporine. Cholesterol and cyclosporine levels should be monitored closely. Many patients with fulminant colitis have anemia or hypocholesterolemia or low magnesium levels can increase the risk of neurotoxicity, including increased risk of seizures. Patients with low levels of cholesterol (cholesterol <120 mg/dL) should be started on lower doses of cyclosporine, and cholesterol and cyclosporine levels should be monitored closely. Many patients with fulminant colitis have anemia or hypokalemia and although these labs should be monitored and corrected, they are not a concern for using cyclosporine.

References:

244. E
At least 5 randomized controlled trials (RCTs) have shown that biofeedback therapy is useful and should be considered first-line therapy for management of constipated patients with dyssynergic defecation, and is endorsed with a grade A recommendation by the American and European societies of neurogastroenterology and motility. However, an RCT showed that patients with slow transit constipation alone are unlikely to benefit with biofeedback therapy. Also, a recent position paper recommended that although biofeedback may be useful in children with encopresis, it is not superior to aggressive conservative management. Biofeedback is useful in constipation and solitary rectal ulcer syndrome, but there has been no RCT, and hence recommendation is low at grade C, likewise for patients with dyssynergia and rectal prolapse. There has been a recent RCT study that showed biofeedback therapy improved bowel function, and to a similar extent in patients with dyssynergic defecation and irritable bowel syndrome. Hence, patients with or without IBS but with dyssynergic defecation are likely to benefit from this treatment.

References:

245. E
Lymphocytic colitis most commonly causes watery diarrhea in middle-aged women. Histology is key to making the diagnosis. Although lymphocytic colitis may be associated with medication such as non-steroidal anti-inflammatories and proton pump inhibitors, beta-blockers are not clearly linked to lymphocytic colitis and metoprolol does not need to be stopped. Therapies for lymphocytic colitis that have been tried with limited success include probiotics, bismuth subsalicylate, and mesalamine. Budesonide 9 mg daily has been shown to be effective in a meta-analysis of randomized controlled trials and is the recommended therapy for lymphocytic colitis in a current AGA guideline.

References:

246. C
Intrahepatic cholestasis of pregnancy (ICP) is a liver disorder in pregnancy characterized by mild to severe pruritus and abnormal liver function tests appearing mainly in the late second or third trimesters of pregnancy. ICP is associated with increased fetal morbidity and mortality, usually due to preterm delivery, fetal distress, and sudden intrauterine fetal death. The general agreement suggests that delivery should not be delayed after 37-38 weeks of gestation in patients with ICP. Ursodeoxycholic acid is the best available therapeutic agent, with proven safety and efficacy in alleviating pruritus and restoring abnormal levels of serum bile acids and hepatic function tests. Liver biopsy and ERCP are not appropriate in this patient. Magnesium sulfate is a treatment for preeclampsia.

Reference:

247. A
The correct answer is (A) to test for BRAF mutation and/or MLH 1 hypermethylation. This patient has early onset colon cancer and thus it is important to rule-out Lynch syndrome. MSI can be found in up to 12% of sporadic colon cancers due to MLH1 gene somatic hypermethylation. Therefore the presence of BRAF mutation or MLH1 promoter hypermethylation is more consistent with sporadic colon cancer rather than Lynch syndrome. Referral to genetic counseling is not required in this setting until further testing, as noted above. Annual colonoscopy and urinalysis would be indicated if the patient was confirmed to have Lynch syndrome. Prior to screening family members, determination of germline mutations (if any) on tumor tissue is recommended as it is a more cost effective approach.

Reference:

248. C
Hypcholesterolemia or low magnesium levels can increase the risk of neurotoxicity, including increased risk of seizures. Patients with low levels of cholesterol (cholesterol <120 mg/dL) should be started on lower doses of cyclosporine, and cholesterol and cyclosporine levels should be monitored closely. Many patients with fulminant colitis have anemia or hypokalemia and although these labs should be monitored and corrected, they are not a concern for using cyclosporine.
References:

249. B

This is most likely functional diarrhea, but may be due to primary bile acid malabsorption (BAM) and thus could respond to cholestyramine. BAM may account for up to 40% of diarrhea-predominant irritable bowel syndrome and is related to a genetic mutation in the normal regulation of bile acids, so that more bile acids reach the colon causing watery diarrhea. The volume of stool is not consistent with a secretory diarrhea, so octreotide should not be given. The fat content is normal so treatment for pancreatic insufficiency or celiac disease does not seem reasonable.

References:

250. C

This question addresses the latest CDC screening guidelines for hepatitis C. There has been a shift from risk-based hepatitis C screening to birth cohort-based screening. The new guidelines recommend routine one-time hepatitis C screening for patients born between 1945 and 1965. In addition, the prior recommendations would still be in effect to screen patients for hepatitis C if they have classic HCV risk factors (IV drug use, blood transfusions prior to 1991, etc.), evidence of liver disease or elevated liver function tests. These birth-cohort screening recommendations have also been adopted by the USPSTF as a level B recommendation.

References:

251. C

Currently, 23 states and the District of Columbia have established medical marijuana programs for the treatment of a variety of conditions. Inflammatory bowel disease is one of the conditions that is an acceptable diagnosis for implementation of medical marijuana. Among the other conditions currently approved for the prescription of medical marijuana are cancer, glaucoma, positive status for human immunodeficiency virus or acquired immune deficiency syndrome [HIV/AIDS], Parkinson’s disease, multiple sclerosis, damage to the nervous tissue of the spinal cord with objective neurological indication of intractable spasticity, epilepsy, cachexia, wasting syndrome, post-traumatic stress disorder, sickle cell disease, post laminectomy syndrome with chronic radiculopathy, severe psoriasis and psoriatic arthritis, amyotrophic lateral sclerosis, chronic pancreatitis, and complex regional pain syndrome.

References:

252. D

The MSH6 mutation in this woman confirms a diagnosis of Lynch syndrome (LS) in spite of a lack of a personal or family history of LS associated cancers. LS is defined as an individual with a germline mutation in 1 of the MMR genes MLH1, MSH2, MSH6, PMS2 or a deletion in the EPCAM gene. As cancer panel testing becomes more widespread deleterious mutations in genes unexpected to be found will become more common. Therefore, the patient should be counseled to begin colonoscopy every 1-2 years and consider hysterectomy and bilateral salpingo-oophorectomy when she is finished childbearing or by the age of 40 years.

References:

253. A

In a large cohort study of 19,486 patients with inflammatory bowel disease, of whom 11,759 (60.3%) had Crohn’s disease and 7,727 (39.7%) had ulcerative colitis or unclassified inflammatory bowel disease, French gastroenterologists reported details of immunosuppressive therapy during the observation period, cases of cancer, and deaths. The multivariate-adjusted hazard ratio of lymphoproliferative disorder between patients receiving thiopurines and those who had never received the drugs was 5.28 (2.01-13.9; p=0.0007). The frequency of non-Hodgkin’s lymphoma (NHL) was approximately 4-9 per 10,000 treated over a course of 1 year. The risk of NHL at baseline increases with age. Those patients >65 years of age on thiopurines had a rate of NHL of 5.41 per 10,000 treated over a course of 1 year. This is compared to those patients <50 years of age who had a rate of NHL of 0.37 per 10,000 treated over a course of 1 year.

Reference:
The clinical presentation for this patient is consistent with acute on chronic liver failure due to hepatitis B flare. He has overt features for liver cirrhosis with portal hypertension and hepatic decompensation with ascites and hepatic encephalopathy. In addition to direct treatment of these complications with diuretics and lactulose, antiviral therapy is strongly recommended to stabilize liver function. This patient does not have evidence for spontaneous bacterial peritonitis and therefore antibiotics are not indicated. Although liver transplantation should be given careful consideration for all patients with decompensated cirrhosis, urgent referral is not clearly indicated, and antiviral therapy may result in stabilization of the liver disease and obviate the need for transplantation. TIPS shunt may be required in the future if the patient develops refractory ascites, but is presently not indicated. Pegylated interferon is contra indicated in patients with decompensated liver disease due to risk for exacerbation of liver failure.

References:

Fecal DNA tests have been shown more sensitive for colorectal cancer and adenoma detection than FOBT and FIT. Digital rectal examination is not a colorectal cancer screening methodology, nor is it recommended as an alternative by the multisociety task force on colorectal cancer screening.

References:

This patient’s cancer has invaded beyond the superficial submucosa. Although the resected specimen appears clear of disease at its lateral margins, the status at the deep margin is often difficult to ascertain in deep lesions; the likelihood of lymphatic involvement in lesions that have penetrated beyond the superficial submucosa is substantial, and argues for more aggressive multimodality therapy.

Reference:

Baclofen has been shown to be safe and effective at a dose of 5-10 mg orally 3 times daily in preventing EtOH consumption. Disulfiram, while effective in preventing alcohol recidivism in patients without cirrhosis has to be used with caution in the population with cirrhosis, as it can lead to severe hepatotoxicity. Prednisolone and pentoxifylline have, until recently, been the mainstay of EtOH hepatitis treatment.

References:

In severely immunocompromised patients, multiple concurrent causes of infectious esophagitis are common. While exudates suggest candida infection, their diagnostic accuracy is low in this setting. Other causes, such as HSV and CMV, are not only common and treatable but could lead to life-threatening complications if missed. Savary dilation is contra indicated in this patient with severe esophagitis (answer A is incorrect). While candidiasis is possible, it is not certain by this endoscopic finding and this is the wrong dose in an immunocompromised patient (answer C is incorrect). Intravenous amphotericin B treatment is never first-line therapy for this situation, and is renal toxic (answer D is incorrect). Saving this transplant organ is important (answer E is incorrect).

Reference:

Several factors have been suggested to worsen reflux symptoms. Patients who have experienced a poor night of sleep experience more pain with esophageal compared to those who slept well. Stress (including auditory) decreases tolerance to esophageal acid and balloon distention (answer B is correct). Acid infusion, but not saline, has been demonstrated to sensitize the esophagus to balloon distention and to subsequent acid infusion. Finally, there may be some increased acid secretion after stopping PPI (rebound), but there are no data to suggest this sensitizes the esophagus.

References:
260. C
Fecal DNA tests have been shown more sensitive for colorectal cancer and adenoma detection than fecal occult blood testing and fecal immunochemical testing. Digital rectal examination is not a colorectal cancer screening methodology, nor recommended as an alternative by the Multisociety Task Force on Colorectal Cancer Screening. References:

261. B
Weight loss of 5%, either achieved by physical activity or by calorie restriction, will improve steatosis, whereas weight loss of 7-10% is required to show improvement in necroinflammation. Substantial and sustained weight loss achieved via bariatric surgery may improve hepatic fibrosis in individuals with NAFLD. In a recently published study, 10% weight loss by lifestyle modification leads to dramatic improvements in steatosis, steatohepatitis, and even fibrosis. References:

262. D
The patient is having a brisk bleed, suspected to be small bowel in origin. The patient is unstable and continues to have bloody bowel movements. In a patient with massive bleeding who is unstable, the appropriate next step is angiography with the plan for embolization. Tagged red cell scan, colonoscopy, capsule endoscopy, and CT enterography can be considered in a “stable” patient, but since this situation has an “unstable” patient, these tests are not appropriate. Reference:

263. A
Pregnancy is associated with an increased plasma volume and therefore increased chance of variceal bleeding if they are already present. Ideally, endoscopy prior to pregnancy to assess for varices should be done to allow risk stratification for the patient. However, endoscopy can be safely done during the second trimester to assess for the presence of varices. If varices are identified during the endoscopy, prophylaxis against variceal bleeding (including the use of nonselective beta blockers and variceal band ligation) can be considered. References:

264. C
Patients with constipation and dyssynergic defecation may demonstrate several abnormalities on digital rectal examination (DRE), including paradoxical increase in anal sphincter tone during attempted defecation, increased resting tone of the anal sphincter and puborectalis muscle, poor push effort, and impaired perineal descent. Usually they demonstrate a normal anocutaneous reflex. The sensitivity of a DRE for identifying dyssynergia is 75%, specificity is 87% and a positive predictive value is 97%. Many patients with dyssynergia may demonstrate a rectocele, but it is not a characteristic finding, and is rarely, if ever, present in men, who also suffer with dyssynergia. A decreased squeeze tone occurs in fecal incontinence. References:

265. E
The most common cause of angina-like, non-cardiac chest pain (NCCP) is gastroesophageal reflux disease. Several randomized studies have proven the value of the so-called “PPI test.” There is no value in repeating the endoscopy. Pulmonary emboli must always be considered in the diagnosis of non-cardiac chest pain (NCCP), but after 3 weeks of symptoms in an active patient who has no respiratory signs or symptoms, this would be a highly unlikely diagnosis. Nitrites have limited value in NCCP and are likely to cause side effects due to lowering of blood pressure. There are no concurrent medical indications for bariatric surgery noted, so surgical consultation is not appropriate at this time.
266. C

If steroid suppositories and high fiber diet don’t improve her symptoms, infrared coagulation of hemorrhoids may be attempted. Banding can sometimes cause cramping and is avoided by some practitioners. Hemorrhoids frequently improve significantly after delivery and so a hemorrhoidectomy is inappropriate.

References:

267. B

This patient has cirrhosis and hepatocellular carcinoma (HCC). The MRI demonstrates all of the diagnostic features of HCC including washout and delayed rim enhancement. The Liver Imaging Reporting and Data System (LI-RADS) is used by radiologists to assess the likelihood that a liver mass is HCC. Patients with LI-RADS 1 are definitely not HCC. LI-RADS 2 is probably benign. LI-RADS 3 is possibly HCC. LI-RADS 4 is likely to be HCC and LI-RADS 5 is definite HCC. Patients with LI-RADS category 4 and 5 do not require a biopsy of the liver mass to confirm HCC in the proper clinical situation, as this could cause seeding and spread of the HCC. If this occurs, the patient would no longer be a candidate for a liver transplant. Patients with LI-RADS category 1 and 2 also do not require liver biopsy because these lesions are benign or very likely benign. Patients with LI-RADS category 3 are generally the only patients who may require a biopsy because of the equivocal nature of the mass.

LI-RADS assesses the likelihood that a lesion is HCC. This is different than the actual staging of the HCC. The staging of HCC is based upon the size and number of lesions present. Stage 1 is a single lesion less than 2 cm. Stage 2 is a single lesion less than 5 cm or up to 3 lesions in the same lobe with total diameter less than 5 cm. Stage 3 HCC is any single lesion greater than 5 cm, more than 3 lesions or lesions within both lobes of the liver. Stage 4 HCC includes evidence of vascular invasion within the liver or metastatic disease outside the liver. Patients with stage 2 HCC are eligible for automatic MELD upgrade points for liver transplantation. Surgical resection and HCV treatment should not be considered in this patient because of the risk of hepatic decompensation in this patient with advanced liver disease (with ascites, low albumin, and thrombocytopenia).

References:

268. C

Button battery ingestions are becoming increasingly common and often with serious complications, due both to their increased use in consumer electronics, with more lithium use, and larger size. When lodged in the esophagus, both poles of these batteries may contact the mucosa, leading to an electrical burn injury and caustic injury from hydroxide radicals. Tissue injury can occur rapidly and be quite severe, with liquefaction necrosis, fistula formation and perforation. Transmural injury can occur in less than an hour, and can be ongoing even after removal; numerous deaths have been reported.

Button battery ingestions have become a public health hazard. Any button battery lodged in the esophagus is a very clear indication for emergent endoscopy. Button batteries should be removed endoscopically if possible, generally with a net or basket. Endoscopic assessment of the mucosal injury may underestimate severity, and imaging is often appropriate to assess for transmural and possible aortic injury. Close observation, nil per os, and administration of IV antibiotics are appropriate when significant mucosal injury is evident. Management of button batteries that have spontaneously passed to the stomach is more controversial, although guidelines recommend removal if the battery is >20 mm and has not passed beyond the stomach on serial radiographs over 48 hours.

References:

269. C

Several studies have unequivocally shown that cardiovascular disease is the single most common cause of death in individuals with NAFLD. This is not surprising, as individuals with NAFLD are heavily enriched with metabolic risk factors such as obesity, diabetes, or dyslipidemia. Malignancy is the second most common cause of death followed by cirrhosis and liver failure. Patients with NAFLD have 10-fold higher risk of dying from cirrhosis compared to the general population.

Reference:
Drug packet ingestion is commonly used by drug smugglers, usually with cocaine or heroin. Multiple packets are usually ingested orally or inserted rectally, generally wrapped in latex condoms or balloons. These may be seen on plain radiographs, although CT scanning is more sensitive. If there is a suspicion for drug packet smuggling, CT scan imaging should be performed if more conventional radiographs are unrevealing. Rupture of a single packet can be fatal, so an attempt at endoscopic (or digital manual) removal, which could precipitate rupture, is contraindicated. Conservative treatment with bowel lavage and serial radiographs is appropriate initially, with surgery done electively for non-passage, and emergently if there are signs of obstruction or possible perforation.

References:

The patient had colon cancer which was cured by resection. The recommended surveillance is to have a colonoscopy 1 year after surgery. If no recurrence, the next colonoscopy should be in 3 years. If at that point no recurrence is seen then he should undergo surveillance colonoscopy every 5 years thereafter.

Reference:

Chronic hepatitis C is associated with a spectrum of extrahepatic manifestations such as mixed type cryoglobulinemia, porphyria cutanea tarda, vitiligo, lichen planus, membranous glomerulonephritis, membranoproliferative glomerulonephritis (MPGN), Hodgkin’s and non-Hodgkin’s lymphoma, diabetes mellitus, peripheral neuropathy, and Sjogren’s syndrome, among others. Of these conditions, mixed-type cryoglobulinemia represents a well-documented manifestation of chronic HCV infection due to its effect on B-cell lymphoproliferation, and may result in the precipitation and deposition of cold-insoluble immune complexes in the skin, kidneys, and peripheral nerves, resulting in characteristic rashes, neuropathy, and membranoproliferative glomerulonephritis. Although skin biopsy and renal biopsy may be considered for evaluation of end-organ complications of cryoglobulinemia, ordering a serum cryoglobulin represents the next best diagnostic test. Antiviral therapy may be considered for patients with HCV-associated cryoglobulinemia, as viral eradication may lead to an improvement in clinical symptoms.

References:

The management of this patient depends on whether the cancers in the family are due to Lynch syndrome (LS). Strategies to identify LS include clinical criteria, prediction models, and tumor or germline testing. This family history is concerning for LS, but does not meet any of the established clinical criteria for HNPPC. Prediction models such as MMRpredict, MMRpro, and the PREMM 1,2,6 have been shown to have greater sensitivity and specificity than clinical criteria but lower than that of tumor testing with microsatellite instability (MSI) or immunohistochemistry (IHC), which is found to be most cost-effective. Germline testing has traditionally been cost ineffective as a screening test. In this case of an unaffected relative in a family whose tumor and germline testing is unknown, national guidelines suggest the tumor of an affected relative be tested for evidence of MMR deficiency. If no mismatch repair (MMR) deficiency is noted, LS is excluded and the patient managed according to the family history of colon cancer. If MMR deficiency is noted, germline testing of the unaffected patient is guided by the tumor IHC results.

If tumor is not available from a relative, germline testing should optimally be done in an affected individual. If not available, germline testing can be offered to the unaffected relative. If the testing is positive, the unaffected patient has LS and should be managed accordingly. If the genetic testing is negative, the patient should be managed according to the family history of cancer.

References:
This patient has decompensated cirrhosis but no esophageal varices. The AASLD Practice Guidelines for prevention and management of gastroesophageal varices state that patients with decompensated cirrhosis but no varices should have screening endoscopy on an annual basis. First-degree variceal prevention with non-selective beta-blockers showed no benefit in preventing development of varices and a suggestion of harm in a randomized controlled trial.

References:

The benefits of ERCP in malignant biliary obstruction include relief of jaundice, nausea, and pruritus, improvement of appetite, and avoidance of hepatotoxicity if and when the patient undergoes chemotherapy. However, ERCP will violate the sterile biliary system and may induce pancreatitis that would result in delay in treatment. This patient presents with a resectable pancreatic cancer and excellent performance score without any significant comorbid conditions. He lacks pruritus or signs of cholangitis. It is therefore not necessary to establish biliary drainage before proceeding to surgical resection. In a randomized, multicenter trial comparing immediate surgery versus preoperative biliary drainage with plastic stenting for 4-6 weeks, a higher rate of complications was observed in the biliary drainage group compared to the early surgery group (74% vs. 39%). Limitations of this study included a high rate of initial ERCP failure (25%) and ERCP complication (46%). PET CT scan would not bring any additional useful information since CT scan and EUS did not show any local or distant metastasis.

References:

Lynch-like syndrome (LLS) is the appraisal given to individuals who have an MSI-H tumor with lack of expression of an MMR protein and no corresponding germline mutation. It has recently been found that bi-allelic somatic MMR genetic alterations (mutations and loss of heterozygosity) explain the cause of LLS in more than 50% of patients. This is an important advance in the management of these patients and their families because they do not have LS. The colon cancer is sporadic. LS screening should cease for the patient and family members. The patient should have colonoscopy at intervals according to the national recommendations for sporadic colon cancer patients. The first-degree relatives should undergo colonoscopy at age 40 or 10 years younger than the age of the youngest relative affected with cancer, in this case 29 years old. There is no rationale for repeating the germline testing as the colon cancer is sporadic, not hereditary.

References:

This patient with collagenous colitis has not responded to appropriate treatments, including budesonide. In a recent controlled trial, mesalamine was no better than placebo in patients with collagenous colitis. For budesonide-refractory collagenous colitis, prednisone or azathioprine would be appropriate considerations. However, before committing to these medications, which may have serious side effects, it is appropriate to exclude other explanations for her refractory diarrhea. One such consideration is celiac sprue, particularly given this patient’s marked weight loss. Sprue is associated with microscopic colitis and may be responsible for her lack of response to therapy. Given that the patient recently had a complete colonoscopy with biopsies, repeat colonoscopy would not add useful information at this point.

References:

The correct answer is (C) colonoscopy with random biopsies. This patient most likely has underlying microscopic colitis. She has the representative demographic of being an older woman with other risk factors in the form of smoking and being on an SSRI (sertraline). There’s also an overlapping association between celiac disease and microscopic colitis. Stool ova and parasite testing is not indicated, as the patient doesn’t have pertinent exposures. The patient has negative TTG antibodies and small bowel biopsies; therefore, obtaining gliadin antibodies is not the best next step. Gliadin antibodies have lower sensitivity and specificity compared to TTG antibodies. Because the patient likely has underlying microscopic colitis, which is a secretory diarrhea, fecal fat is expected to be low. Fecal collection for fecal fat will not confirm the diagnosis of microscopic colitis.

References:
The validity of a diagnosis of low-grade dysplasia is poor. Most studies demonstrate only fair or worse agreement between pathologists for this diagnosis. Therefore, before contemplating changing the therapeutic approach to the patient, the diagnosis should be confirmed by a second pathologist with expertise in gastrointestinal pathology.

References:

This patient meets the criteria for serrated polyosis syndrome (SPS), as she has at least one serrated polyp proximal to the sigmoid and a family member with SPS. Patients meeting any one of the following 3 criteria satisfy the World Health Organization requirement for SPS: (1) at least 5 serrated polyps proximal to the sigmoid, with 2 or more ≥10 mm; (2) any serrated polyp proximal to the sigmoid with a family history of serrated polyosis syndrome; (3) >20 serrated polyps of any size throughout the colon. Patients with SPS should undergo yearly colonoscopy.

Reference:

Patients with hereditary hemochromatosis have an increased risk of cirrhosis if the initial serum ferritin is >1,000 ng/mL. By contrast, those with an initial serum ferritin <1,000 ng/mL are unlikely to have advanced fibrosis. Therefore, this patient should be offered liver biopsy for evaluation of fibrosis and to measure hepatic iron concentration (HIC); HIC >400 micromoles/gm dry weight have an increased risk of cirrhosis. Previous guidelines have also recommended performing a liver biopsy in hemochromatosis patients with elevated liver enzymes as well as those over age 40. Although many of the manifestations of iron overload are reversed by phlebotomy, joint manifestations may not improve with therapeutic phlebotomy. The optimal frequency of phlebotomy therapy should be weekly or biweekly rather than monthly. MRI scanning with estimation of iron concentration is not necessary in this patient because liver biopsy will be performed in this case.

References:

The overall relapse rate for discontinuing azathioprine monotherapy at 3 years is approximately 50%. Predictive factors for relapse include a CRP ≥20 mg/L, a neutrophil count (10^9/L) ≥4, and a hemoglobin <12 g/dL.

Reference:

Colonoscopy has been shown to reduce mortality form colorectal cancer compared to incidence-based mortality from colorectal cancer in the general population. FOBT and flexible sigmoidoscopy, likewise, have been shown to reduce mortality from colorectal cancer. Data comparing CT colonography with colonoscopy has been for sensitivity of detecting lesions, but not mortality. Fecal DNA testing, likewise, has been compared to FIT and FOBT for sensitivity, but there is no data on mortality reduction. Digital rectal examination is not a recommended method for colorectal cancer screening.

Reference:

This patient has poor anal sphincter function as a result of 2 prior fourth-degree tears during vaginal delivery. An intact anal sphincter complex is required to undergo an ileal pouch anal anastomosis (IPAA). Even with an intact anal sphincter, patients with J-pouches may have nocturnal stool leakage, due to relaxation of the external anal sphincter at night, and incontinence as they age. Patients with a damaged anal sphincter, as in this case, would have considerable difficulty with fecal incontinence in the setting of an IPAA. Therefore, the recommendation for this patient is to have a permanent ileostomy and not a J-pouch (answer C is correct). Although 3 biologics for UC, former cigarette smoking, erythema nodosum, and pan-ulcerative colitis may reflect a more severe disease course and behavior, none of these factors would preclude an IPAA (answers A, B, and E are incorrect). Former cigarette smoking may increase the risk of pouchitis but not fecal incontinence.

References:
285. A
While HIV infection had the highest rate of age adjusted mortality for years, mortality from hepatitis C has now surpassed mortality from HIV infection as well as hepatitis B due to the growing HCV cirrhotic population in the U.S.
Reference:

286. D
Delayed hemorrhage risk increases with polyp size and proximal location. Prophylactic coagulation of visible vessels in the resection defect of large lesions has not been associated with decreased post endoscopic resection bleeding. An Australian multi-center randomized trial of 347 patients with average post endoscopic resection defect of 4cm did not show any significant reductions in clinically significant bleeding with prophylactic treatment of visible vessel, 5.2% with prophylactic treatment using coagulation forceps (SOFT COAG at 80W Effect 4, ERBE VIO 300D) vs 8.0% no additional therapy, p=0.3. Techniques to decrease the risk of capturing the muscularis propria have been described, including avoidance of a large snare size and adequate submucosal injection. Microprocessor control units alternate cycles of short cutting bursts with prolonged periods of coagulation and limit peak voltage on the basis of impedance feedback, which result in a less marked coagulating effect than the use of a non-microprocessor-controlled blended or coagulation current. Histologic specimen quality is improved as well using the microprocessor controlled current compared to blended current. Non-granular LSTs have a higher risk of advanced histology and of submucosal fibrosis compared to granular LSTs.
References:

287. D
The patient has an obstructing complication of Crohn’s disease with 2 strictures: 1 in the anorectal canal and the other in the right colon. There is almost certainly an irreversible fibrostenotic component to the strictures, and medications will not treat this large bowel obstruction (answers A, B, C are incorrect). Prolonging surgery could lead to worsening obstruction and inevitable perforation. If the right colon stricture is resected and the anorectal stricture is not addressed, the patient will continue to have obstruction and have the potential for an obstruction in the distal sigmoid colon (answer E is incorrect). The patient requires a total colectomy and end ileostomy to control the large bowel obstruction (answer D is correct). Due to the fact that the anus is involved, there is no chance for a future restorative surgery and the ileostomy will be permanent.
References:

288. C
Frequency with which endoscopy is performed for an indication that is included in a published standard list of appropriate indications and the indication is documented is the indicator listed with the highest level of recommendation.
Reference:

289. E
Non-granular LSTs have a very low risk of invasive cancer (about 1%) compared to non-granular LSTs (about 15%). ESD has a high rate of perforation (about 5%) compared to EMR (<1%), and the risk is higher in the colon than the stomach. The cecum and transverse have the highest risk, possibly because they have no retroperitoneal attachments. The only patients with granular LSTs that benefit from ESD are the occasional patients with superficial submucosal invasion (<1,000 microns). These patients have a low risk of lymph node metastasis and do not need surgery after ESD. Patients with deep submucosal invasion have a high risk of lymph node metastasis and should be referred for surgical resection if they are acceptable candidates. EMR is the treatment of choice for this lesion.
References:

290. B
ELISA-based drug assays are considered as accurate as other assays to measure drug concentration; however, they are insensitive for measuring ADAs since circulating drug competes with the detection moiety and leads to an inconclusive result. The high-pressure liquid chromatography (HPLC)-based mobility-shift assay eliminates this problem by using different technology. There is a liquid phase radio-immune assay that measures radioactivity to estimate the drug concentration. ELISA assays are widely available and typically cost the least.
291. B

This patient is clearly at risk for delirium tremens, a life-threatening complication of withdrawal that is likely to occur in the first 96 hours. The most appropriate choice is to admit the patient, supplement thiamine to prevent Wernecke's encephalopathy, folate to overcome the macrocytic anemia seen. The patient clearly has a high risk for alcoholic hepatitis, but the use of pentoxifylline is of questionable use and is no longer recommended as the sole therapy. Baclofen can be used to prevent recurrence of drinking but clearly it is too early in the course of the presentation to initiate its use.

Reference:

292. B

This patient has large esophageal varices which could put him at risk for variceal bleeding. He would thus be a good candidate for primary prophylaxis against variceal hemorrhage. Either band ligation of the varices or a non-selective beta-blocker is appropriate at this point. There is no role for TIPS before ligation because the patient has never bled. Due to a higher risk of complications compared to band ligation, sclerotherapy should be reserved for cases where variceal band ligation has failed. He is not currently a liver transplant candidate due to his ongoing alcohol abuse.

Reference:

293. D

In the Multi-Society guideline, SSPs are treated much like conventional adenomas of similar size. Patients with 1 or 2 SSPs <10 mm in size should have surveillance colonoscopy in 5 years. Patients with an SSP ≥10 mm in size or an SSP with cytological dysplasia should have colonoscopy in 3 years.

Reference:

294. E

Those with HIV/HCV coinfection have a higher rate of infectivity due to higher viremia levels, with greater risk of maternal fetal transmission and sexual transmission. The natural history of HCV/HIV coinfection is one of accelerated fibrosis with higher rates of hepatic decompensation and a higher risk of developing hepatocellular cancer. Due to a reduction in innate immunity, there is a lower rate of spontaneously clearing HCV as well during acute infection.

References:

295. B

It is easy to miss early cancer in the anal canal, especially in high-risk individuals. If the findings do not fit your diagnosis, consider high-resolution anoscopy or a surgeon's opinion. Answer A is incorrect since reassurance in a high-risk patient without visualization and biopsy of the lesion could miss a malignant lesion. Answer C is incorrect, since the patient has never exhibited any signs or symptoms of Crohn’s disease. Cauterization without biopsying for possible intraepithelial lesion is not advised (answer D is incorrect).

References:
296. A
This patient has overt gastrointestinal bleeding, but is stable. The reported diagnostic yield of second-look upper or lower endoscopy is reported to be between 2-25%. Most overt bleeding can be initially evaluated with second-look endoscopy procedure. Therefore double balloon enteroscopy or capsule endoscopy are not indicated at this point. The patient is not having brisk bleeding, so angiography is not needed. Push enteroscopy would be favored over upper endoscopy to better evaluate the distal duodenum and proximal jejunum.
Reference:

297. C
While this patient may just have hemorrhoidal bleeding, it would seem prudent to assess for other etiologies of lower GI bleeding in this patient with advanced cirrhosis before trying to treat hemorrhoids. Rectal varices can be treated with local therapies. In some cases, banding rectal varices can cause further bleeding when the band eventually falls off. Glue injection or a TIPS procedure is advised for troublesome sometimes massive bleeding.
References:

298. C
Entecavir, tenofovir and interferon are all recommended therapies for hepatitis B. However, entecavir therapy in a HIV patient not on HAART therapy is not recommended due to generation of HIV-resistant variants by entecavir. Interferon is an option as well but her viral level is high, and she requires viral suppression for her HIV disease, which can also suppress her HBV DNA. Adefovir is a second line agent, less potent in HBV suppression, has long-term renal toxicity, and should not be considered as an initial therapy for this patient. Lamivudine has activity against both HIV and HBV (as does emtricitabine) but must be given with tenofovir to prevent development of resistance.
References:

299. C
This patient is presenting with symptoms that are characteristic for a motility disorder (dysphagia to solids and liquids) such as achalasia. Patients are often initially mis-diagnosed with GERD and often do not respond to PPI therapy. Dysphagia to solids and liquids, chest pain, and regurgitation should alert the provider to the possibility of a motility disorder such as achalasia. The diagnostic evaluation of a patient with dysphagia should always include EGD, and in this case, esophageal motility testing to identify the characteristic manometric findings of simultaneous esophageal contractions or of absent or incomplete LES relaxation (Figure). Empiric therapy initially is not wise if dysphagia is a part of the patient’s symptom complex.
References:

300. B
Using water immersion rather than air insufflation for insertion reduces the need for special devices (e.g., overtubes, enteroscopes, etc.) from 37% to 5% in patients referred for incomplete colonoscopy due to colonic redundancy. A pediatric scope can enable passage of a complex, angulated sigmoid colon, but results in increased looping in patients with redundant colons. Sigmoid straighteners are needed only when water immersion and careful technique are not successful.
Reference:
<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3. B</td>
<td>42. A</td>
<td>81. D</td>
<td>120. A</td>
<td>159. E</td>
</tr>
<tr>
<td>25. D</td>
<td>64. E</td>
<td>103. D</td>
<td>142. C</td>
<td>181. A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>197. D</td>
<td>236. B</td>
<td>275. D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>199. B</td>
<td>238. E</td>
<td>277. E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>201. E</td>
<td>240. D</td>
<td>279. B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>205. C</td>
<td>244. E</td>
<td>283. A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>207. D</td>
<td>246. C</td>
<td>285. A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>208. D</td>
<td>247. A</td>
<td>286. D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>211. C</td>
<td>250. C</td>
<td>289. E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>215. D</td>
<td>254. E</td>
<td>293. D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>218. D</td>
<td>257. B</td>
<td>296. A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>221. D</td>
<td>260. C</td>
<td>299. C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>223. D</td>
<td>262. D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>224. A</td>
<td>263. A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>225. B</td>
<td>264. C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>226. B</td>
<td>265. E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>227. A</td>
<td>266. C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>228. C</td>
<td>267. B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>229. E</td>
<td>268. C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>230. C</td>
<td>269. C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>231. C</td>
<td>270. D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>232. D</td>
<td>271. D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>233. B</td>
<td>272. E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>234. A</td>
<td>273. C</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>