Inflammatory Bowel Disease

Description/Etiology

Inflammatory bowel disease (IBD) is a chronic gastrointestinal (GI) inflammatory disease differentiated into two subtypes: Crohn’s disease (CD; also known as regional enteritis) and ulcerative colitis (UC). CD can involve any part of the GI tract, from the mouth to the anus, with discontinuous lesions and transmural inflammation. UC affects the mucosal layer of the large bowel and/or rectum in an uninterrupted fashion. IBD is marked by relapses and remissions. Clinical manifestations of IBD include abdominal pain, fistulas, diarrhea, bloody stools, malabsorption, and dehydration. Small bowel obstruction, cholelithiasis, nephrolithiasis, and/or right-sided hydronephrosis can develop in persons with CD. Complications of UC include toxic megacolon, perforation, hemorrhage, malignant neoplasms, pyelonephritis, and nephrolithiasis. IBD can also affect the skin, joints, and eyes. QOL can be diminished, and the prevalence of anxiety disorders and depression is increased in persons with IBD.

The etiology of IBD is thought to involve an altered, dysregulated immune response to intestinal microorganisms in individuals with genetic predisposition. IBD is believed to be an immune-mediated disorder with an increased production of inflammatory mediators that lead to overexpression of helper T cells, type 1 (Th-1) in CD and Th-2 in UC. The immune response disrupts the intestinal mucosa, resulting in a chronic inflammatory process.

Signs and symptoms of IBD range from mild to severe and depend on the area of the intestine that is affected by inflammation. It is important for clinicians to inquire about patient history of symptoms, because flares of IBD commonly go undiagnosed or misdiagnosed. Clinicians should suspect that a patient with a history of diarrhea for more than 6 weeks accompanied by abdominal pain and weight loss might have CD, particularly if this group of signs and symptoms appears in younger patients. The hallmark of CD is the presence of fistulas and perianal disease. Laboratory studies can be useful in the management of CD, but are often of little value for diagnosis. Numerous diagnostic tools are used in the determination of IBD; however, colonoscopy is considered the most valuable diagnostic tool in determining IBD. The American Society for Gastrointestinal Endoscopy recommends a colonoscopy with ileoscopy for the evaluation of IBD and for differentiating UC and CD. Severe fatigue is often reported by patients with IBD and is thought to be related to gut inflammation. The frequent comorbidity between depression and IBD appears to be related to increased immune-inflammatory, oxidative, and nitrosative stress, and gut-brain neurologic interactions playing a part in the etiology of both conditions.

Treatment of IBD requires pharmacotherapy, often in combination with surgery and with consultations from dietitians, gastroenterologists, and colorectal surgeons. Symptomatic relief is provided with antidiarrheal agents (e.g., loperamide), bile acid-binding agents (e.g., cholestyramine), and antispasmodics (e.g., dicyclomine). Pharmacotherapeutic management follows a step-wise approach. Aminosalicylates (e.g., sulfasALAzine, mesalamine) are the first-line pharmaceuticals followed by corticosteroids (e.g., predniSONE) and immune-modifying agents (e.g., 6-mercaptopurine or azaTHIOprine). All of the pharmacotherapeutic agents can be used additively and the goal is to wean patients from corticosteroids as soon as possible; if tapering steroids results in recurrence of symptoms, immunomodulators (i.e., pharmacotherapeutic agents that weaken the immune system) or tumor necrosis factor (TNF) antagonists (e.g., inFLIXimab) should be considered. The route of administration depends on the location and severity of disease. UC is considered a
surgically curable disease because it is limited to the colon; the most common approaches are proctocolectomy with ileostomy and total colectomy with ileoanal anastomosis. Surgical intervention for patients with CD is more difficult and is reserved for management of complications. Procedures include ileorectal or ileocolonic anastomosis, diverting ileostomy or colostomy, segmental resection, and/or stricturoplasty. Education is imperative for patients with IBD. A low-residue diet can decrease the frequency of bowel movements. A high-residue diet can be implemented in cases of ulcerative proctitis. Patients with comorbid psychiatric disorders (e.g., anxiety, depression) will benefit from referral to a mental health clinician. Prognosis varies depending on the severity of disease and the number of exacerbations. Overall, patients with CD have a lower quality of life than patients with UC. Both CD and UC increase risk for colorectal cancer (CRC; see Food for Thought, below). Dietary supplements are being evaluated as potential adjuvant and complementary therapies for patients with IBD. These supplements include vitamin D, fish oil, probiotics, curcumin, aloe vera, and cannabis sativa.

**Facts and Figures**

IBD affects ~1–2 million persons in the United States and more than 30,000 new cases are diagnosed annually. IBD occurs more frequently in developed countries, colder climates, and urban areas than in developing countries, warmer climates, and rural areas. The incidence of IBD is 70–150/100,000 individuals per year in the United States. Internationally, the incidence of IBD is 0.5–24.5/100,000 for UC and 0.1–16/100,000 for CD. IBD shows a bimodal age distribution, with a large peak in incidence at 15–30 years of age and a smaller peak at 50–70 years of age. About 75% of patients with CD require surgery within 10 years of diagnosis and 25–60% require repeat surgery in the subsequent 10 years. More than 25% of patients with UC eventually undergo total colectomy. Mortality risk is increased 1.4- to 5-fold in patients with IBD; mortality risk is higher in patients with CD than in those with UC.

**Risk Factors**

A positive family history is the most important independent risk factor for developing IBD; first-degree relatives of affected patients are 5 to 20 times more likely than members of the general population to develop the disease. Cigarette smoking, chronic obstructive pulmonary disease (COPD) and Ashkenazi Jewish ancestry have been linked to increased risk of IBD.

**Signs and Symptoms/Clinical Presentation**

Common manifestations of IBD include:

- **Diarrhea**: Blood and/or mucus can be present. The patient might experience nocturnal diarrhea and/or stool incontinence. Patients commonly report abdominal pain with prolonged periods of diarrhea
- **Abdominal pain with cramping**: Persons affected with CD often experience pain in the right lower quadrant and persons with moderate to severe UC often report feeling pain around the umbilicus or the lower left quadrant
- **Constipation**: Patients with UC can present with constipation when the disease is limited to the rectum
- **Bowel movement abnormalities**: Rectal pain and/or gross bloody stools with the feeling of constantly needing to pass stools
- **Nausea and vomiting**: These symptoms occur more often in CD than in UC. Weight loss and/or anorexia can occur (also more common in CD)
- **Additional signs and symptoms can include low-grade fever, diaphoresis, malaise, and/or arthralgias. Depression and/or anxiety can be present. Extraintestinal manifestations, which affect 10–20% of patients, include oral ulcers, arthritis, uveitis, hepatitis, cholangitis, and erythema nodosum**

**Assessment**

- **Patient History**
  - Inquire about a family history of IBD and ask if the presenting symptoms have occurred in the past; ask if the patient is a cigarette smoker, nonsmoker, or former smoker
  - Ask about the characteristics, onset, duration, and severity of symptoms
- **Physical Findings of Particular Interest**
  - Patients might appear malnourished and underweight; growth retardation can be the only sign in younger patients with IBD. Fever, dehydration, and/or pallor secondary to anemia might be evident
  - Abdominal tenderness is common; some patients with CD have a palpable mass in the right lower abdominal quadrant
  - Gross blood in stool on rectal examination is a common finding
  - Patients with CD can have perianal fissures or fistulas, abscesses, and/or rectal prolapse
Laboratory Tests
• CBC can show an elevated WBC count, which is common in patients with active inflammatory disease but does not necessarily indicate infection; anemia might be present
• Stool studies are performed if bacterial, viral, or parasitic causes of diarrhea are suspected
• Erythrocyte sedimentation rate and C-reactive protein are increased in some cases
• Vitamin B12, albumin, and electrolytes can be decreased, indicating malabsorption and/or dehydration

Other Diagnostic Tests/Studies
• Barium enema radiographic studies will show the following differences between CD and UC:
  – Narrowing of the colon, thickening of the bowel wall, mucosal edema, regional skip lesions, and/or stenosis and fistulas in persons with CD
  – Varying shapes of ulcerations with coarse granular mucosal tissue and edema, thumbprinting (i.e., symmetrical thickening of haustral folds), and a narrow and/or a shortened colon in severe cases of UC
• Colonoscopy will show alternating distinct ulcerations and normal mucosa in the ascending colon in CD, and a friable mucosa with pseudopolyps and/or ulcers of the descending colon in UC

Treatment Goals
Promote Optimum Health and Reduce Risk of Complications of IBD
• Assess patient for manifestations and complications of IBD, assess vital signs, and review results of laboratory and diagnostic tests; report abnormal findings to the treating clinician
  – Request referral to a dietitian, gastroenterologist, and/or colorectal surgeon, as appropriate; depending on complications, request referral to dermatology, nephrology, oncology, and/or ophthalmology clinicians, as appropriate
• Administer medications, as prescribed, and monitor for adverse effects (e.g., emotional lability, elevated glucose levels, infection, fever, and/or leukopenia)
• Follow facility pre- and postsurgical protocol if patient becomes a surgical candidate; reinforce pre- and postsurgical education and verify completion of informed consent documents. Monitor postsurgically for complications, including assessing the surgical site for infection and bleeding

Promote Emotional Well-Being and Educate on IBD Diagnosis
• Assess anxiety level, learning readiness, and for knowledge deficits on the IBD diagnosis; provide emotional support and educate patient/family members on disease pathology, potential adverse effects of medications (e.g., delayed growth, decreased bone density), treatment risks (e.g., leukopenia) and benefits (e.g., improved mood, decreased pain), and the importance of following the prescribed treatment regimen and continued medical surveillance
• Request referral to a mental health clinician, as appropriate, and refer to the Crohn’s & Colitis Foundation http://www.crohnscolitisfoundation.org/

Food for Thought
Patients with IBD require a higher level of preventive care than patients with general medical conditions, according to researchers. It is crucial that a primary provider and gastroenterologist co-manage IBD in patients, such as having the gastroenterologist inform a primary care provider of the unique, individualized needs of patients with IBD; this can include minimizing preventable infections in patients with IBD by administering scheduled vaccines. Additionally, primary care providers should also screen for cervical cancer, non-melanoma skin cancer, osteoporosis, melanoma, and identify anxiety or depression in patients with IBD (Farraye et al., 2017)

Patients with IBD are also prone to developing fecal incontinence (FI), especially in those who have frequently loose stools, rectal urgency, or are > 40 years of age, which can significantly impact the quality of life in patients with IBD. Researchers analyzed the prevalence of fecal incontinence in 168 Swedish patients with IBD and 304 American patients with IBD, whom 13.7% and 19.7% reported having FI more than once per month, respectively (Simrén et al., 2017)

Authors of a literature review found a significant correlation between venous thromboembolic complications (VTE) and IBD, which can include pulmonary embolism or deep venous thrombosis. Because of this correlation, researchers recommend prophylaxis for patients with IBD suspected of developing VTE, but only in those who are not contraindicated to prophylaxis. Additionally, patients can also receive pharmacologic anticoagulant therapy (e.g., Fondaparinux, Low Molecular Weight Heparin);(Fornaro et al., 2017)

Authors of a recent literature review on managing IBD in elderly patients found limited evidence-based practice support regarding effective treatment options, which can lead to complications in this population group. Prolonged steroid use was found to be common among elderly patients; however, this treatment option can lead to adverse effects such as significant morbidity in elderly patients with IBD (Ananthakrishnan et al., 2017)
Cannabis and its derivatives might be helpful in patients with IBD for symptomatic relief because of the potential anti-inflammatory effects found in cannabis; however, randomized controlled trials are necessary to determine the efficacy of cannabis effects on human patients with IBD (Ahmed et al., 2016)

CRC accounts for 10–15% of deaths in patients with IBD, and CRC-related mortality rates are higher in patients with IBD than in those without IBD. Investigators recently reported that a specific alteration in the STAT3 gene is associated with increased risk of both IBD and CRC (Ryan et al., 2014)

Fecal microbiota transplantation, in which the gut microbial community is altered through the instillation of stool from a healthy donor into a recipient, might be a treatment option for patients with UC. Researchers in a randomized study of 70 patients with active UC reported that fecal microbiota transplantation induced remission in 24% of patients, while 5% of patients who received the placebo achieved remission. There was no significant difference in the rate of adverse events (Moayyedi et al., 2015)

Patients with IBD are at an increased risk for vaccine-preventable diseases (e.g., influenza, pneumococcal pneumonia) with the use of long-term immunosuppressive therapies, but vaccination rates remain low in this patient population. Investigators reported that the implementation of a patient-directed educational program in which all patients were given educational materials about the importance of vaccination resulted in significant increases in influenza vaccination (from 23% to 47%) and pneumococcal pneumonia vaccination (from 21% to 32%); (Reich et al., 2015)

The clinical presentation and disease course of IBD might differ by race. Researchers who conducted a study of 1,235 patients with IBD and 541 with UC at a large tertiary hospital in Chicago, Illinois found that blacks with CD were more likely than whites to require surgery and less likely to have ileal involvement (Sofia et al., 2014)

Red Flags

- Antidiarrheal and anticholinergic medications are contraindicated in acute severe IBD
- Patients with UC who develop toxic megacolon can become septic

What Do I Need to Tell the Patient/Patient’s Family?

- IBD is chronic and characterized by periods of exacerbation and remission
- Corticosteroids can affect growth in younger patients and can affect bone density in all patients
- Cigarette smoking and/or stress can exacerbate IBD
- Patients should report fever, increased bleeding (e.g., bloody stool), and abdominal pain to their treating clinicians
- Colonoscopy surveillance at 2-year intervals is necessary starting 8–10 years after diagnosis

References

