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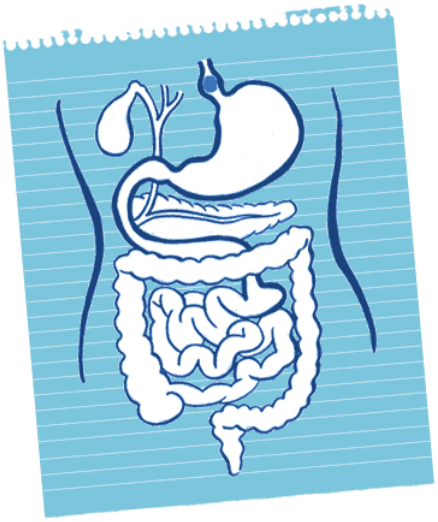
Inflammatory Bowel Disease

Module I



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Module Goals

The goal of the following continuing education module is to introduce and to update gastroenterology nurses on Inflammatory Bowel Disease as it relates to current practice. After you study the following information you will be able to:

- Explain the pathology and risk factors of IBD.
- Describe the differential diagnosis of the IBD Diseases – Crohn's Disease and Ulcerative Colitis.
- Discuss the preliminary diagnostic tools available outside of the GI Lab.

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Case Study

Winston MacBride was doubled over in pain as he lurched through the doors of Dr. Fahey's office. Lately he had been anorexic and fatigued. Currently he was experiencing severe abdominal pain, cramping and vomiting. He had recently had an unplanned weight loss of 12 pounds. Dr. Fahey suspected IBD, and admitted Mr. MacBride to the hospital for hydration and additional testing. If the differential diagnosis was confirmed, the treatment plan would be focused upon eliminating his symptoms, and then by maintaining symptom-free periods of remission. This is accomplished by the suppression of the inflammation within the gastrointestinal tract that is causing the symptoms to occur.

Introduction to IBD

Inflammatory Bowel Disease (IBD) consists of a group of chronically recurring diseases that cause the intestines to become inflamed (red and swollen). This, in turn, causes abdominal pain and cramping, diarrhea (sometimes with blood or mucus), weight loss, fever, fatigue, skin and eye irritation, anemia and lower gastrointestinal bleeding. Debilitating, and in some instances life-threatening, there are almost two million Americans who suffer with some form of IBD in the United States alone.

Initial symptoms of IBD can be vague, and a delay in a diagnosis is often common. There is no known cause, it cannot be prevented, and it is not contagious. Areas of research into this complex and puzzling condition are exploring both genetic and environmental sources. Some studies indicate that IBD may be linked to an unknown bacteria or virus, whereas others to an alteration of the body's immune responses.

Despite intensive research, the precise causes of IBD remain unclear. Some evidence suggests that it might be an autoimmune disorder caused by an abnormal immune response to invading or pre-existing microorganisms in the intestine.

IBD can involve either or both the small and large intestines. Many conditions can cause inflammation of the bowel, which is caused by white blood cells entering the lining of the gut and making it hot and swollen. Crohn's Disease and Ulcerative Colitis (UC) are the most widely recognized forms of the disease.

Both fall into the category of "idiopathic" inflammatory bowel disease due to the fact that their etiology remains a mystery.

Risk factors are age (most people are diagnosed with Crohn's Disease between the ages of 15 and 35, and UC between the ages of 15 and 30), ethnicity (people of Jewish and European descent are four to five times more likely to develop Crohn's Disease), family history, genetics, heredity and environment (people living in Northern climates seem to have a greater risk of developing the disease). Some cases of UC have begun after an episode of gastroenteritis. Although stress does not cause IBD, it can heighten the symptoms when it is manifesting.

Active IBD is characterized by acute inflammation. Chronic IBD is characterized by distortion of the intestinal mucosa and residual scarring. Although both Crohn's Disease and Ulcerative Colitis manifest with similar symptoms, they are both very different in the manner in which they affect the gastrointestinal tract.

A thorough diagnostic evaluation is required to identify the precise condition that is causing the inflammation of the bowel, in order that the appropriate treatment regimens can be instituted. The location and type of inflammation varies greatly between UC and Crohn's, and this affects the treatment choices.

A Full Thickness Assault

Crohn's Disease, a chronic inflammatory condition, affects both the small and large intestines. It can manifest in the gastrointestinal tract at any point between the mouth and the anus. Most often, it involves the distal small bowel and colon, while the rectal area is often spared. It can develop in several places simultaneously, with healthy tissue existing in between the affected inflamed tissue (skip lesions). In time, large ulcers that extend deep into the intestinal wall develop in these inflamed areas. Affecting all four layers of the bowel wall, this can cause complications that include strictures (a narrowing of part of the intestine), fistulas (abnormal tunnels that connect two organs) and fissures (cracks in the anal skin).

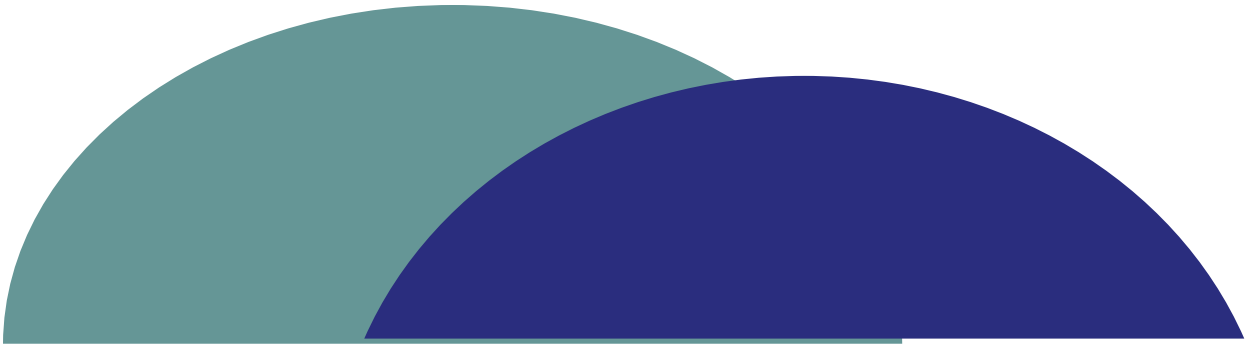
Patients with Crohn's Disease are often thin and may suffer from malnutrition secondary to malabsorption of nutrients. In order to function properly, the body must extract and absorb the nutrients from food.

Most of this absorption occurs in the jejunum and ileum, and is severely impeded by the inflammation in these areas. Consequently, Crohn's Disease in children and adolescents can lead to growth problems, as well as a delay in the onset of puberty, since malabsorption interferes with the normal processing of nutrients from ingested food.

Inflammation is the body's normal protective reaction to an infective organism. A healthy body can control the inflammation by instituting inherent anti-inflammatory mechanisms. Patients with Crohn's Disease, however, have an imbalance between the number of cells that cause inflammation and those that protect against it.

Other symptoms will vary according to the site and severity of the disease. Initial clinical symptoms will manifest as diarrhea (sometimes, but not always containing blood), weight loss, fever, fatigue, and abdominal pain and tenderness, usually most severe over the pelvic area. Sores and abscesses are commonly noted around the anal area.

Extra-intestinal symptoms can manifest as sores on the tongue or inside the cheek, inflammation of the iris of the eye (uveitis), painful, stiff and swollen joints (arthritis), and/or as sore, red lumps on the skin (erythema nodosum). Gallstones may occur if the disease affects the small bowel as a consequence of malabsorption.



The Creepy Crawler

Ulcerative Colitis, the inflammation and ulceration of the lining of the large intestine, is progressive and segmental, proceeding uniformly upwards from the anus and rectum, which are always affected. It can involve either a small portion of the left side of the large intestine (distal colitis), or its entire length (pancolitis). Treatment will vary according to the site and severity of the condition. It does not affect the small intestine, and, unlike Crohn's Disease, only affects the innermost, mucosal layer of the intestinal wall. Also a chronic disease, there are periods of remission interspersed with flare-ups of the clinical symptoms. Although it can occur at any age, onset most commonly occurs between the ages of 15 and 30 years old.

Clinical findings include diarrhea that contains blood or mucus, which is often accompanied by tenesmus, a persistent urge to empty the bowel that is caused by an inflamed rectal area. Patients experience crampy abdominal pain that is usually positioned over the area of the colon, fevers in response to the inflammation, anorexia, weight loss and fatigue. Patients with longstanding and extensive UC are also at an increased risk for the development of colon cancer and liver diseases, along with sclerosing cholangitis and adenocarcinoma of the biliary ducts. A serious complication of ulcerative colitis can be a toxic megacolon, in which gases collect in the colon and cause it to inflate. Other potential complications include hemorrhage and perforation, which can be precipitated by the repetitive mucosal inflammation.

Whereas IBD is suspected as a differential diagnosis based upon a patient's symptoms and history, there are a series of tests that are performed to confirm the diagnosis. An initial diagnosis is tentatively formed based upon patient symptoms. However, while these are symptoms of IBD, they can also be symptoms of parasitic infections, diverticulitis, celiac disease or colon cancer as well.

The Game's Afoot

Initial investigation includes a number of blood tests and stool samples. Although there are no specific blood tests that will yield a definitive diagnosis, there are specific tests that are necessary to obtain during the course of a thorough and complete evaluation. These will rule out the presence of anemia (CBC) and determine the levels of protein in the blood, a low level of which suggests severe ulceration. They will also alert the diagnostician to current levels of the "C" reactive protein, which is also indicative of the presence of ulceration. Also important to examine are the state of the liver, and to discover if there is a salt imbalance that would be attributable to high levels of diarrhea.

A leukocyte scan, in which white blood cells are labeled with a small amount of radioactivity, can be utilized to create a computer pictorial of the extent and severity of inflammation. A fecal occult blood test (Hemoccult) is performed to determine if there is microscopic bleeding into the stool, as well as tests of the stool, in order to determine if any bacteria is present.

The next step in the differential diagnosis of either Crohn's Disease or UC would be radiological. An abdominal X-ray can determine which portion of the bowel is affected by disease, and just how actively that disease process is manifesting. It also reveals bowel narrowing,

obstruction or dilation. The radiological appearances of Crohn's Disease and Ulcerative Colitis are very different. The inflammatory process of Crohn's Disease often causes narrowing of the intestine, fissures and fistulas, and manifests radiologically with a distinctive "cobblestoning" effect. The inflammation progresses asymmetrically. The inflammation of Ulcerative Colitis does not usually cause the intestine to narrow and doesn't cause fissures or fistulas. The inflammation progresses symmetrically as the disease progresses.

Histological evaluation of tissue samples is imperative. Granulomas, small masses of tissue and blood vessels, are common and strongly indicative of Crohn's tissue. Inflammation extends across the full thickness of the intestinal wall. There is also an increase in the number of lymphocytes, which is a white blood cell that helps the body fight infection. Histological evidence of Ulcerative Colitis is found when there is an overabundance of polymorphs, which is a type of white blood cell that kills bacteria. Inflammation is confined to the mucosa.

Additional diagnostic exams are performed and interpreted in order to make a conclusive diagnosis of Crohn's Disease. An ultrasound will detect any complications that involve the liver or gallbladder. A Hydrogen Breath Test will determine if there is an overgrowth of bacteria in the intestine. CT Scans and MRIs will delineate any disease complications, such as abscesses and fistulas.

Malabsorption Studies are extremely important in the differential diagnosis of Crohn's Disease. Certain nutrients may be absorbed poorly, if at all. The Schilling Test studies vitamin B12 absorption. The Intestinal Permeability Test, a sweet drink containing a mixture of sugars, is administered in order to determine how efficiently the body is absorbing them.

More familiarly known as CRP, the C-Reactive Protein test is occasionally performed in order to assess the progression of inflammation, as well as to monitor treatment modalities. Although not specific enough to substantiate a differential diagnosis, it does serve as a functional marker of both infection and inflammation.

The final diagnostic step is an endoscopic examination of the gastrointestinal tract. The "gold standard" for the diagnosis of IBD is considered to be the colonoscopy. Once a diagnosis is confirmed, a treatment plan can be formulated.

Application of Learned Concepts in the Clinical Setting: Case Study Revisited

The gastroenterologist assigned to Mr. MacBride's case ordered blood work, stool samples and an abdominal X-ray. Mr. MacBride was anemic, and blood and mucus showed up in his stool. His intestine was not narrowed, and although inflammation was indeed present, it proceeded symmetrically up his large intestine from his anus to the splenic flexure.

Based upon these initial results, his physician made a tentative diagnosis of Ulcerative Colitis. A colonoscopy with a subsequent histological examination of tissue would yield a more definitive diagnosis. This would be performed before any treatment options were planned, discussed or implemented.

IBD: The Attack Plans

Ulcerative Colitis	Crohn's Disease
• Continuous inflammation	• "Skip areas" or segmental areas of ulceration, with normal tissue between ulcerations
• Mucosal ulceration only	• Ulcerations typically affect all layers of the bowel wall
• Most often seen in the left colon and rectosigmoid areas, but at times may involve the entire colon	• Usually seen in the right colon and involving the terminal ileum, but may involve any area of the GI tract
• Characterized by exacerbations and remissions	• Often slow and progressive
• May cause a shortening effect on the bowel	• Can narrow the lumen, with stricture formation
• "Cobblestoning" effect less consistent	• More consistent mucosal "cobblestoning" effect seen on radiographic examination
• Diarrhea is bloody and mucopurulent	• Diarrhea is watery and sometimes associated with steatorrhea
• Pseudopolyps common	• Pseudopolyps rare
• Inflammatory masses rare	• Inflammatory masses common

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Test Questions

Please note: You must complete the test online through www.sgna.org/IBD in order to earn CE credit. Though the test questions are included in this booklet as a reference, hard copies of this test will not be processed.

1. A risk factor for susceptibility to IBD is:
   a. obesity
   b. diet
   c. age
   d. stress

2. Onset of IBD is most common between the ages of:
   a. 1 – 5
   b. 30 – 50
   c. 60 – 75
   d. 15 – 30

3. Crohn's Disease:
   a. progresses symmetrically
   b. affects both the small and large intestines
   c. is never rectal sparing
   d. does not cause intestinal narrowing

4. Colitis of the entire length of the large intestine is called:
   a. pancolitis
   b. proctitis
   c. distal colitis
   d. proctosigmoiditis

5. Clinical manifestations of UC include:
   a. diarrhea that contains blood or mucus
   b. fistulas and fissures
   c. strictures and narrowing of the intestine
   d. malnutrition

6. Potential complications of UC are:
   a. hemorrhage
   b. severe abscesses of the tongue
   c. malnutrition
   d. gallstones

7. A definitive histological presentation of Crohn's Disease is the presence of:
   a. an overabundance of polymorphs
   b. red blood cells
   c. inflammation of the mucosa
   d. granulomas

8. The Shilling Test studies:
   a. protein absorption
   b. vitamin B12 absorption
   c. sugar absorption
   d. levels of inflammation

9. Crohn's Disease manifests as:
   a. diarrhea accompanied by tenesmus
   b. crampy abdominal pain that is usually positioned over the area of the colon
   c. ulcers that extend into the large intestinal wall
   d. a toxic megacolon

10. The symmetrical spread of Ulcerative Colitis begins in the:
   a. ileum
   b. rectum
   c. splenic flexure
   d. jejunum

11. The gold standard for the diagnosis of IBD is:
   a. colonoscopy
   b. MRI
   c. The Intestinal Permeability Test
   d. a Hydrogen Breath Test

12. Progression of inflammation is monitored by a:
   a. UA
   b. CRP
   c. MRCP
   d. CBC