WHAT IS INFLAMMATORY BOWEL DISEASE (IBD)?

• Chronic inflammation of the intestinal tract

• Two related but different diseases:
  – Ulcerative colitis
  – Crohn’s disease
WHAT IBD IS NOT

• IBD is sometimes confused with:
  – Irritable bowel syndrome (IBS)
  – Diverticulitis
  – “Colitis”
INTESTINES: NORMAL STATE

• Protective immune cells are present in intestinal wall

• Immune system turns on and off to fight harmful substances like bacteria and viruses that pass through intestines
Microflora distribution in the GI tract

- Oral cavity - $10^7$ to $10^8$
- Stomach - 0 to $10^3$
- Duodenum - < $10^8$
- Jejunum - < $10^3$ to $10^5$
- Ileum - < $10^5$ to $10^7$
- Large intestine - $10^{10}$ to $10^{12}$
- Stool - $10^{10}$ to $10^{12}$
WHAT HAPPENS IN IBD?

• The immune system is activated by some unidentified factor.

• The immune system does not turn off:
  – Uncontrolled inflammation
  – Attack on normal intestinal cells
Multifactorial Basis of IBD

Immune factors

Genetic factors  Environmental factors

Nonspecific inflammation
Tissue injury
Restitution and repair

Chronic Inflammation: Imbalance Between Mediators

Pro-inflammatory

- TNF-α
- IL-1β
- IL-8
- IL-12
- IFN-γ

Anti-inflammatory

- IL-4/IL-13
- IL-1ra
- TGF-β
- IL-10
HOW COMMON IS IBD?

- More than 1 million cases estimated in the United States:
  - Ulcerative colitis: 50%
  - Crohn’s disease: 50%
- New cases diagnosed at a rate of 10 cases per 100,000 people
SCOPE OF THE PROBLEM

• Chronic lifelong diseases
• Periods of active disease alternating with periods of disease control:
  – Other conditions can cause symptoms that mimic those of IBD
• Complications can develop
• Surgery frequently required
ULCERATIVE COLITIS

• Inflammation of the inner lining of the colon (mucosa)
• Only the colon is involved- starts in the rectum and spreads up the colon in continuous pattern
• Curable by surgery- removal of the colon
Gastrointestinal Tract

- Esophagus
- Stomach
- Small Intestine
- Colon
- Appendix
- Rectum
Disease Distribution at Presentation

n=1116

37%

17%

46%

Farmer RG, Easley KA, Ranking GB.
ULCERATIVE COLITIS: SYMPTOMS

- Diarrhea
- Rectal bleeding
- Rectal urgency
- Abdominal cramps
- Fever
Normal Colonic Mucosa
UC: Transition Point
Disease Distribution at Presentation

Farmer RG, Easley KA, Ranking GB.
ULCERATIVE COLITIS: SYMPTOMS

- Diarrhea
- Rectal bleeding
- Rectal urgency
- Abdominal cramps
- Fever
UC Natural History

Hendriksen C, Kreiner S, Binder V.
CROHN’S DISEASE

- Inflammation can involve all layers of the intestinal wall
- Can involve any part of the intestines from mouth to rectum with skip lesions - areas in between disease can be normal
- Usually comes back after surgery
Gastrointestinal Tract

- Esophagus
- Stomach
- Small Intestine
- Colon
- Appendix
- Rectum
Locations in the GI Tract Most Often Affected

- 40% Large and small intestine
- 25% Large intestine only
- 30% Small intestine only
- 5% Stomach and small intestine
CROHN’S DISEASE: SYMPTOMS

• Same as those for ulcerative colitis
• Weight loss
• Fistulas- abnormal connection between intestine and other organs
• Abscess- collection of pus
• Strictures- areas of narrowing
Crohn’s Disease
Complications: Fistulas

- A tunnel between two sections of the intestines or between the intestines and other organs, including the skin
Crohn’s Disease
Complications: Abscesses

- A localized collection of pus within the tissue of the GI tract

Abscess from a fissure in the small intestine into the peritoneal cavity
Complications of CD: Fistulas

**Abdominal Fistula**

**Perianal Fistula**
Cumulative Probability of Surgical Intervention in CD

Extraintestinal Manifestations

- **Skin disorders:**
  - Erythema nodosum
  - Pyoderma gangrenosum

- **Joint disorders:**
  - Peripheral arthritis
  - Sacroiliitis
  - Ankylosing spondylitis

- **Ocular disorders:**
  - Iritis, uveitis, and episcleritis
Extraintestinal Manifestations

- **Hepatobiliary:**
  - Gallstones
  - Primary sclerosing cholangitis (PSC)
  - Cholangiocarcinoma

- **Renal:**
  - Renal stones
  - Amyloidosis

- **Other manifestations:**
  - Aphthous stomatitis
  - Hypercoagulable state
Episcleritis
Peripheral Arthritis
Erythema Nodosum
Pyoderma Gangrenosum
Treatment of IBD
Goals of Treatment

- Induce response/remission
- Maintain response/remission
- Heal mucosal lining
- Prevent or cure complications (eg, fistulas)
- Improve quality of life
- Restore and maintain nutrition
- Limit surgery
Treatment Options for IBD

- 5-ASA agents
- Antibiotics
- Steroids
- Immunomodulators:
  - 6-MP/azathioprine
  - Methotrexate
- Biologic agents:
  - Anti-TNF agents
  - Natalizumab