Diseases of the Colon

I have no disclosures

I work for the Curators of the University of Missouri
Inflammatory Bowel Disease

**ULCERATIVE COLITIS**
Mucosal Ulceration in Colon

**CROHN’S DISEASE**
Transmural Inflammation

- Ileocolitis
- Ileitis
- Colitis
Inflammatory Bowel Disease
Epidemiology

- Approximately equal incidence among males and females
- 10%-25% of relatives affected
- Strong concordance in disease type among family members

Approximately equal incidence among males and females
10%-25% of relatives affected
Strong concordance in disease type among family members
Inflammatory Bowel Disease

Etiology

- Smoking
  - Exacerbates Crohn’s disease
  - Protects against ulcerative colitis
    - Reasons are unknown
## Inflammatory Bowel Disease

### Distinguishing Features

<table>
<thead>
<tr>
<th></th>
<th>Ulcerative Colitis</th>
<th>Crohn’s Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bleeding</strong></td>
<td>++++</td>
<td>+</td>
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<tr>
<td><strong>Tenesmus</strong></td>
<td>++++</td>
<td>++</td>
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<tr>
<td><strong>Abdominal Pain</strong></td>
<td>+</td>
<td>+++</td>
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<tr>
<td><strong>Fever</strong></td>
<td>+</td>
<td>++</td>
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<tr>
<td><strong>Weight Loss</strong></td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td><strong>Perineal Disease</strong></td>
<td>0</td>
<td>+++</td>
</tr>
<tr>
<td><strong>Fistulas</strong></td>
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Inflammatory Bowel Disease

Distinguishing Features

- **Ulcerative Colitis**
  - **Anatomy**: Limited to colon
  - **Endoscopy**: Continuous inflammation
  - **Gross Pathology**: Mucosal involvement only
  - **Biopsy**: Diffuse inflammation

- **Crohn’s Disease**
  - **Anatomy**: Any part of the GI Tract
  - **Endoscopy**: Discontinuous, focal lesions
  - **Gross Pathology**: Transmural involvement
  - **Biopsy**: Focal inflammation, Granulomas

- **Indeterminate Colitis**
Endoscopic Features

- Loss of vascular markings
- Diffuse erythema
- Exudate
- Hemorrhage
ENDOSCOPIC SPECTRUM OF PROCTOCOLITIS

Mild

Moderate

Severe
Crohn’s Disease
Clinical Features

- Chronic abdominal pain
- Diarrhea
- Perineal disease
- Distension
- Weight loss
- Fever
- Rectal bleeding (variable)
- Growth failure
Crohn’s Disease
Clinical Features

- Obstruction
- Appendicitis-like presentation
- Fistulas
- Abscesses
- Gallstones
- Nephrolithiasis
- Steatorrhea
Inflammatory Bowel Disease
Clinical Features

- Toxic Megacolon
  - Edema of the bowel wall
Inflammatory Bowel Disease
Clinical Features

Toxic Megacolon
- Edema of the bowel wall
Inflammatory Bowel Disease
Clinical Features

- Extraintestinal Manifestations
  - Skin
  - Joints
  - Eyes
  - Liver
  - Thromboembolic
Ulcerative Colitis
Systemic Complications in SKIN

Erythema Nodosum
Pyoderma Gangrenosum
Distinguishing Features

- Multiple
- Arises from flat mucosa
- Infiltrates broadly
- Uniformly distributed
- Anaplastic
- Younger age
Ulcerative Colitis
Systemic Complications

Peripheral Arthritis

- Monoarticular
- Asymmetrical
- Large > small joint
- No synovial destruction
- No subcutaneous nodules
- Seronegative
Ulcerative Colitis
Indications for Surgery

- Exanguinating hemorrhage
- Toxicity and/or perforation
- Suspected cancer
- Significant dysplasia
- Growth retardation
- Systemic complications
- Intractability
Crohn’s Disease
Intestinal Complications

Fistula

- Mesenteric
- Entero-enteric
- Entero-vesical
- Retroperitoneal
- Entero-cutaneous
Crohn’s Disease
Endoscopic Appearances

- Aphthae
- Stellate Ulcer
- Longitudinal Ulcer
- Pseudopolyp
Crohn’s Disease
Endoscopic Appearances

Aphthae

Stellate Ulcer

Longitudinal Ulcer

Pseudopolyps
CROHN’S DISEASE

Ileitis

“String Sign”
Inflammatory Bowel Disease
Ethnic and Racial Incidence

Incidence per $10^5$ population

- Jews: 10
- Non-Jewish Caucasians: 4
- Blacks: 2
Inflammatory Bowel Disease
Management

- Anti-inflammatories
  - 5-ASA agents
    - Sulfasalazine
    - Mesalamine
    - Olsalazine
  - Corticosteroids
- Immunosuppressives
  - 6-Mercaptopurine
  - Azathioprine
- Antibiotics
  - Metronidazole
  - Quinolones
- Antidiarrheals
  - Loperamide hydrochloride
  - Diphenoxylate with atropine
  - Cholestyramine
- Biologics
Inflammatory Bowel Disease Management

- Proctitis
  - Mesalamine suppositories/enemas
  - Steroid foams/enemas

- Distal colitis
  - Mesalamine enemas
  - Steroid enemas
  - Sulfasalazine
  - Oral mesalamine
Sulfasalazine

SULFAPYRIDINE 5-AMINOSALICYLATE
### Crohn’s Disease Management

#### Drug Therapy

<table>
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<tr>
<th>Gastroduodenal</th>
<th>Colitis</th>
<th>Perineal</th>
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<tr>
<td>Prednisone</td>
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<td>Metronidazole</td>
</tr>
<tr>
<td>Omeprazole</td>
<td></td>
<td>Ciprofloxacin</td>
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**Ileal**
- Budesonide
- Prednisone
- Sulfasalazine
- Mesalamine
- 6-MP/azathioprine

**Colitis**
- Distal
  - 5-ASA enemas
  - Steroid enemas
- > 60 cm
  - Sulfasalazine
  - Mesalamine
  - Metronidazole
  - Prednisone
- Severe
  - Prednisone
  - parenteral steroids
  - Antibiotics

**Perineal**
- Metronidazole
- Ciprofloxacin
- 6-MP

**Remission**
- 6-MP/azathioprine
- Oral Mesalamine
- Methotrexate

**Biologics**
When to Use AZA/6-MP in IBD: Evidence-based indications

- Steroid-dependent disease
- Steroid-resistant disease
- Relapse prevention
- Perianal disease
- Fistulizing disease
- Post-operative recurrence prevention
- Prevention of Colectomy for UC After Induction with CsA

TNF

- An early, pivotal mediator of inflammation
- A pro-inflammatory molecule that activates the “master switch” nuclear factor KB which lends to further production of other pro-inflammatory cytokines
- Recruitment of inflammatory cells by up-regulation of adhesion molecules (cell trafficking)
IBD - Signal Transduction

- LPS
- IL-1
- IL-IR
- TNFα
- TNFR
- PG-PS
- TLR-2
- Nod
- LPS

NIK → IKK

IκBα degraded

NFκB

Inactive complex

P65 P50

Active complex

P65 P50

MHCII, ICAM-1, iNOS, COX-2

IL-1β TNFα IL-6 IL-8

IκBα

PO₄

PO₄
Infliximab

- IgG1 MAB
- Binds to TNF both soluble and transmembrane
- Accent I - conducted to determine whether maintenance Infliximab provides better long-term efficacy than no further treatment in people with Crohn’s disease who responded to one dose
Diarrhea is both a sign & symptom

- As a Symptom
  - ↑ Frequency
  - ↑ Volume
  - ↓ Consistency

- As a Sign
  - Stool weight > 150 to 200 g per 24 hr.
  - Stool water > 150 to 200 ml per 24 hr.
History is helpful in evaluating patients with diarrhea

- **History:**
  - Duration, travel history, medications, patient age, diet

- **Character:**
  - Frequency, volume, blood, consistency

- **Other manifestations:**
  - Fever, weight loss, anorexia, nausea, vomiting, dehydration
Features of diarrhea provide clues to the pathophysiological process

**Features**
- Blood, pus in stool
- Large volume (>1 liter/day)
- Effects of fasting:
  - Diarrhea persists
  - Decrease in diarrhea
- Stool pH (<6)

**Possible mechanism**
- Colonic & rectal inflammation
- Active secretion
- Not a dietary factor
- Non-absorbed dietary solute
- Non-absorbed carbohydrate in children
Chronic and recurrent diarrhea should always be investigated

History & physical exam

- **Stool exam:**
  - Cultures, ova & parasites
  - Blood, leukocytes, microscopic fat
  - Quantitative volumes and fat studies as indicated

- **Other studies:**
  - Endoscopic examinations w/biopsy
  - Absorption studies
  - Special studies:
    - Imaging studies (CAT scans, ultrasound, etc.)
    - Barium studies
    - Stool and urine analyses for laxative & diuretics
Lower GI Bleeding
Yield of Urgent Colonoscopy

Massive Hematochezia

Colonoscopy

60-70% continue bleeding

No lesion found or Failed therapy

Stop spontaneously

Surgery

Controlled with angiography

Endoscopic therapy

20-30% Controlled
Lower GI Bleeding Options

- **Diagnostic**
  - Anoscopy
  - Sigmoidoscopy
  - Colonoscopy
  - Balloon Enteroscopy
  - Small Bowell x-ray
  - Scintigraphy
  - Angiography
  - Intra-operative Endoscopy

- **Therapeutic**
  - Endoscopic
    - Thermal
    - Injection
    - Polypectomy
    - Argon Plasma coag.
  - Angioigraphic
    - Vasopressin
  - Surgery
Lower GI Bleeding

Massive

Resuscitation

Upper endoscopy
Anoscopy

Oral purge

Urgent colonoscopy

Lesion found
Endoscopic hemostasis

No Lesion found
Scintigraphy, angiography, enteroscopy

Continued bleeding
Surgery
Diverticular Disease - Bleeding

Colonic lumen
Microscopic Colitis

- Collegenous and lymphocytic
- Chronic watery diarrhea
- Normal endoscopic appearance
- Female, 50-70 years old
- Collagen band/lymphocyte infiltration
- Treatment - bismuth subsalicylate
- Treatment - budesonide
Pneumatosis Coli (Pneumatosis Cystoides Intestinalis)

- Multiple gas filled cysts in the sub mucosa of the gut
- Distinguish from pneumatosis linearis
- Most cases occur in small bowel
- 6% occur in the colon - usually left side
- Associated conditions - appendicitis, IBD, diverticulosis, c. diff., colitis, ileus, AIDS, steroids, COPD
Colitis Cystica Profunda

- Mucin-filled cysts located in sub mucosa of bowel
- 3 patterns
  - Localized with ploypoid lesion
  - Diffuse with multiple polypoid lesions
  - Diffuse with a confluent sheet of cysts
    - Etiology: unknown, associated with diseases that predispose to ulceration – IBD, infections, or cancer
    - Presents with bleeding, mucus, diarrhea or prolapsed rectum
    - Endoscopy – may look like cancer, polyps, lipoma
Endometrosis (of the intestines)

- Usually involves the rectosigmoid, appendix or ileum
- Most asymptomatic, can bleed, cause pain
- Differential - IBD, diverticulitis, TB, ischemia, neoplasia
Solitary Rectal Ulcer Syndrome (SRUS)

- Disorder of evacuation
- Causes rectal ulceration, erythema or mass associated with straining, rectal prolapse
- Found on anterior wall or rectum
- Symptoms - constipation, mucus, blood
- Diagnosis is by histology
- Treatment - improve bowel habits, biofeedback