Inflammatory Bowel Disease

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Objectives

- Discuss the epidemiology of inflammatory bowel disease
- Review the pathophysiology and presentation of Crohn’s disease and ulcerative colitis
- Discuss the intestinal and extraintestinal complications of inflammatory bowel disease
Epidemiology of IBD

- Crohn’s Disease (CD) and Ulcerative Colitis (UC)
- Peak onset 15-30 yrs; second small peak later (more consistent in UC)
- Affects 1-1.5 million Americans
- CD prevalence 50/100K and incidence 5/100K annually
- CD=UC
- Higher rates in industrialized countries; lower rates in Asia, Africa, South America
- More common in Jewish population
- Higher rates in whites than African Americans
Scope of the problem

- Slightly higher mortality; higher morbidity and decreased quality of life
- Direct costs $3.1 billion for CD and $2.1 billion for UC
- National Health Interview Survey of 1999
  - First 5 yr after onset-most hospitalization occurs.
  - Beyond 5 yr excess utilization mostly in use of prescription drugs and specialist care
- Excess annual hospitalizations, ED visits, annual office visits
Pathophysiology

- Inflammatory response to intestinal microbes in genetically susceptible host
- Inflammation result of dysfunctional response to infection
- Immune system plays a role
- Twin studies- genetic predisposition stronger in CD than UC
- Cigarette smoking
Pathophysiology

**Crohn’s disease**
- Transmural inflammation- fistulas, abscesses, strictures
- Can affect any part of GI tract- mostly small bowel and colon
- Rectal sparing common
- Perianal disease common- fistula, sinus tract, abscess
- Mucosa has cobblestone appearance
- Noncaseating granulomas
- Discontinuous involvement (skip lesions)

**Ulcerative colitis**
- Inflammation of mucosa and submucosa
- Little perianal disease
- Rectal involvement is the rule- inflammation extends variable distance into colon
- Continuous lesion confined to colon
- Crypt abscesses
- Pseudopolyps
Presentation of IBD

- **Systemic- fever, fatigue, weight loss**
  - Gradually progressive and more frequent in CD; may be present before dx

- **Pain and tenderness based on location**
  - Rectum or LLQ-UC
  - RLQ- ileal CD
  - Diffuse- significant areas of bowel involvement
  - Palpable mass- thickened bowel loops or abscess
  - Frank peritonitis- bowel perforation

- **Vomiting- consider bowel obstruction**
Presentation of IBD

- **Diarrhea**
  - UC - bloody, frequent, small in volume, mucoid rectal discharge, tenesmus, fecal incontinence
  - CD - less frequent, larger volume, absent tenesmus (if limited to small intestine)

- **CD prone to fistula and abscess because of transmural nature of disease**
  - Isolated small intestine involvement prone to internal fistula
  - Perianal disease more common in pts with ileocolic disease
## Truelove and Witts Criteria

<table>
<thead>
<tr>
<th></th>
<th>MILD</th>
<th>SEVERE</th>
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<tbody>
<tr>
<td>Diarrhea</td>
<td>≤4</td>
<td>≥6</td>
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<tr>
<td>Rectal bleeding</td>
<td>Mild</td>
<td>Severe</td>
</tr>
<tr>
<td>Tachycardia</td>
<td>Absent</td>
<td>Present</td>
</tr>
<tr>
<td>Fever</td>
<td>None</td>
<td>≥38.8</td>
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<tr>
<td>Hemoglobin</td>
<td>Nl or &gt;11</td>
<td>&lt;8</td>
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<tr>
<td>ESR</td>
<td>&lt;30</td>
<td>&gt;30</td>
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<tr>
<td>Albumin</td>
<td>Normal</td>
<td>&lt;3</td>
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Complications of IBD

- Acute fuminant colitis
- Toxic megacolon
- Fistula
- Abscess
- Bowel obstruction
- Perforation
- Hemorrhage
- Colorectal cancer
- Extraintestinal
Acute Fulminant Colitis

- Severe form of chronic UC; some CD
- Affects 5-15% of UC; 6% CD
- Up to 30% may be initial presentation of IBD; can occur at any time
- Mortality <10%; indication for surgery in 16.9%
- Progression of inflammation beyond mucosa
Acute Fulminant Colitis

- Symptoms
  - Fever > 38.6
  - Tachycardia > 100
  - WBC > 10.5
  - Albumin < 3
  - Bloody diarrhea
  - Abdominal tenderness
  - Distention
  - Diminished/absent bowel sounds
  - Metabolic acidosis
  - Electrolyte abn
Acute Fulminant Colitis

- AXR findings
  - Edematous, irregular colon with thumbprinting
  - Pneumatosis coli in some cases
- Exclude other causes of colitis
- Treatment
  - Supportive: IVF, NPO, TPN, lytes, blood
  - High dose steroids
  - Broad spectrum antibiotics
  - Surgical consult
- Avoid antimitotility agents
Toxic Megacolon

- Progression of toxic colitis with total or segmental dilation of colon
- Lifetime incidence in UC 2.5%; among hospitalized patients 6-17%
- Rate of perforation 15-46%
- Mortality before 1976 was 27% for medical tx and 19% for surgical tx; now 0-2%

- Triggering events
  - Narcotics, anticholinergics, BE, colonoscopy, hypokalemia, abrupt d/c steroids, anti-inflammatory meds
Toxic Megacolon-Diagnosis

1. Radiographic evidence of dilation
2. At least 3:
   - T > 101.5
   - HR > 90
   - WBC > 10.5
   - Hct < 60% normal
3. At least 1:
   - Dehydration
   - Altered mental status
   - Electrolyte abnormalities
   - Hypotension
Toxic Megacolon

- **AXR**
  - Dilation of colon > 6 cm
  - Loss of normal hastral markings
  - Most commonly transverse colon

- Mean maximal dilation of colon 9.2 cm
- Perforation imminent if colon 12-15 cm
Toxic Megacolon Treatment

- Supportive-NPO, IVF, lytes, NGT
- High dose steroids
- Broad spectrum antibiotics
- “Rolling”
- Surgery
  - Perforation, uncontrolled bleeding, progressive dilation, failure to improve
- Hyperbaric oxygen
Fistula

- CD--33% at 10 years; 50% after 20 years
- No known specific risk factors
  - 54% perianal
  - 24% enteroenteric
  - 9% rectovaginal
  - 13% other
Types of fistulas

- Enteroenteric
  - Asx or present like CD flare; may be palpable
- Enterovaginal
  - Air or feces from vagina
- Enterovesicular
  - Recurrent polymicrobial UTI or pneumaturia
- Enterocutaneous
  - Bowel contents leaking from cutaneous site
- Fistula to intra-abdominal compartment
  - Intra-abdominal abscess (psoas abscess)
  - Lead to obstructive sx of bowel of other intra-abdominal structures (ureters)
Fistula Treatment

- Bowel rest with TPN
- Flagyl
  - Response rate approaches 50%
  - Typically recur upon d/c
- Cipro
- Antibiotics may be bridge to more effective long-term tx
  - Infliximab, azathioprine, 6-mercaptopurine
- Surgery
Abscess

- 25% CD develop abscess at some point
- Site of intestinal disease defines location of collection
  - Most common in RLQ adjacent to TI
  - Can be intraperitoneal, retroperitoneal, intramesenteric
- Result of chronic seepage of bacteria and intestinal contents through transmural sinus tracks/fistula
Abscess

- Suspect in patient with worsening pain, fever, leukocytosis
- Pts on steroids may have blunted temp response to infection
- Groin pain or difficulty with hip flexion-CT to r/o iliopsoas abscess
- CT to diagnose
- Treatment
  - Broad spectrum antibiotics
  - Surgical vs percutaneous drainage
  - Avoid steroids
Perianal abscess/fistula

- 30% CD develop perianal or perirectal fistula
  - Commonly complicated by abscess
- Fever, anal pain worsened by defecation, tenderness, erythema, induration of skin overlying perianal space
- Superficial abscess can be drained at bedside
- Deeper abscess requires operative drainage
- Delays in dx- sepsis, necrosis, sphincter impairment, anal stenosis
Bowel Obstruction

- More common with CD vs UC
- SBO is most common complication requiring surgical correction in CD
  - Affects 35-54%
- Most common location is terminal ileum
- Most have repeated partial SBO rather than complete SBO

Causes
- Fibrosis and scarring with stricture formation
- Mass effect from adjacent phlegmon or abscess
Gastroduodenal obstruction

- 0.5-13% pts with CD have gastroduodenal involvement
- GOO caused by involvement of antrum, pylorus, duodenal bulb
- May have acute episode of GOO
- Usually have recurrent episodes-postprandial fullness, early satiety, periodic vomiting, upper abdominal pain
Perforation

- Associated with toxic megacolon
  - 2% pts with UC
  - If no megacolon, concern for Crohn’s
  - Mortality >40%

- Crohn’s disease
  - Spontaneous free perforation occurs in 1-3%
  - Often sealed perforations
  - Can occur anywhere-ileum, jejunum, gastroduodenum
  - Colon-with toxic colitis or acute exacerbation of disease, esp with distal obstruction
Perforation

- Review by Greenstein
  - Small bowel in 77%; majority distal ileum
  - Multiple perforations in 13%
  - Presenting manifestation of CD in 30% of 84 cases in literature
  - Overall surgical mortality 9.4%

- Series of 33 pts
  - 22 involved ileum
  - 9 colon (2 in assoc with TM)
  - 1 jejunum
  - 1 gastroduodenum
  - Only 2 died
Perforation

- Can also occur with colonoscopy
- AXR
  - For colonic dilation or free intraperitoneal air
  - Pneumoperitoneum present in 20% of perforated CD
  - <20% with ileal perforations
Hemorrhage

- Mild GI bleeding common with IBD
- Severe bleeding 0-6%
- Accounts for 10% urgent colectomies for UC
- Can occur at any age or disease duration but usually younger patients
Hemorrhage with UC

- Most have extensive colitis; almost all have pancolitis
- Degree of hemorrhage related to extent and severity of disease
- May be diffuse from large areas of ulcerated mucosa
- Endoscopic treatment not possible
- Often require colectomy
Hemorrhage with CD

- Erosion of blood vessel within deep ulcerations that extend into bowel wall
- Bleeding often from localized source
  - 65% small bowel (often ileum)
  - 12% colon
  - 23% unidentified
Hemorrhage dx/tx

- NGT-r/o UGIB
  - 30% tx for significant GIB had bleeding duodenal ulcer as source
- LGIB- colonoscopy
- Angiography if brisk bleeding
  - Up to 70% success
- Vasopressin
- Nuclear medicine rbc scan if not localized by angiography
- Surgery
Colorectal cancer

- UC and CD have almost equivalent incremental risk for CRC when equivalent length of large bowel affected

- Risk factors
  - Increased duration of disease
  - Increased extent of disease
  - Presence of primary sclerosing cholangitis

- For patients with UC
  - 2% at 10 years
  - 8% at 20 years
  - 18% at 30 years
Extraintestinal manifestations

- May occur simultaneously with flares or may be unrelated to course of bowel disease
- Thromboembolic
- Ocular
- Hepatobiliary
Thromboembolic complications

- Incidence of thrombotic complications 1-39%
- Cause of hypercoagulability unclear
- 60% pts with active inflammatory disease had hypercoagulable state vs 15% with inactive disease
Thomboembolic Events

- 65% thrombophlebitis, DVT, PE
- Mesenteric, peripheral vessels, portal and hepatic veins, cardiac vessels, cerebral veins, gonadal veins, retinal vessels rare
- Portal vein thrombosis 9% of DVT
  - Mortality 50%
  - GIB caused by varices
- CVA accounts for 10%
  - Retinal branch artery occlusion, carotid thromboembolism, rarely cerebral venous thrombosis
  - Of IBD pts with CVA, 80% develop permanent neurologic sequelae or death
Ocular complications

- Ocular inflammation occurs in 1.9-13%
- Slightly more common in CD vs UC
- Episcleritis
  - 3-4%; parallels clinical course
  - Dilation and engorgement of vessels causes hyperemia or conjunctiva and sclera
  - Itching and burning; no pain
  - Infection of ciliary vessels and inflammation of episcleral tissues
- Tx- treat underlying IBD; topical steroids
Ocular complications

- **Uveitis**
  - Does not parallel course of bowel disease
  - Can progress to blindness
  - 0.5-3%; females > males; HLA B27
  - Bilateral eye involvement
  - Pain, photophobia, visual blurring, headache, iridospasm
  - Inflammation in anterior chamber with perlimbic edema
  - Tx - topical or systemic steroids
Ocular complications

- Subcapsular cataracts
  - Chronic corticosteroid use
  - Developed in 25% pts receiving 15 mg prednisone for one year
  - Should have annual slit lamp exams
Hepatobiliary complications

- 3-7.5% of IBD pts have associated hepatobiliary disease
- Severe liver disease more common with IBD involving colon
- Hepatitis, pericholangitis
- Gallstones
- Primary sclerosing cholangitis
Primary Sclerosing Cholangitis

- Chronic cholestatic liver disease characterized by ongoing inflammation, obliteration and fibrosis of biliary tree that progresses to cirrhosis
- Course does not parallel course of IBD
- Onset may not be related to onset of IBD
- Associated with UC > CD
  - Prevalence of PSC in IBD 2.4-7.5%
  - Prevalence of IBD in PSC 50-75%
- Male:female 2:1
Primary Sclerosing Cholangitis

- **Presentation**
  - Asymptomatic elevation of ALKP with otherwise normal LFTs
  - Fatigue, anorexia, weight loss, pruritis
  - Acute cholangitis - F/C, RUQ pain, jaundice

- **ERCP**
  - Multiple strictures of varying lengths
  - Dilatation of intrahepatic and extrahepatic bile ducts
  - “beaded” appearance of bile ducts
Primary Sclerosing Cholangitis

- No medication has impacted natural course
- Mean survival time 12 years in sx pts; 75% asx pts survive 15 years or more
- Liver transplant is treatment of choice
  - 5 year survival 70-90%
  - Recurrence in transplanted liver approx 20%
- Cholangiocarcinoma develops in 10-20%
  - Median survival is 9 months
References


