Inflammatory Bowel Disease
2012

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Diagnostic Evaluation of Crohn’s Disease and Ulcerative Colitis

Objectives

1. Describe and differentiate diagnostic features of Ulcerative Colitis and Crohn’s Disease to apply in the clinical practice setting for an accurate diagnosis.

2. Be able to apply the utility of endoscopy, imaging, and serology to patients’ symptoms.
Inflammatory Bowel Disease

Ulcerative Colitis  Crohn’s Disease

Indeterminate colitis

UC  CD
**Ulcerative Colitis**

- Inflammation of mucosal layer of the colon
  - Diarrhea associated with blood in stool, bowel urgency, frequency and cramping
- Involvement of the rectum and may extend in a proximal and *continuous* fashion to involve other portions of the colon only
- Variable extent of colon involvement
- Extraintestinal manifestations
- Cancer risk
Ulcerative Colitis

- Ulcerative proctitis
- Distal colitis or proctosigmoiditis
- Left-sided ulcerative colitis
- Extensive colitis
- Pancolitis


- [Photo provided by cureforcolitis.org/def.html](http://cureforcolitis.org/def.html)
Crohn’s Disease

- Patchy inflammation with mouth to anus involvement
  - Diarrhea, abdominal pain and weight loss
- Transmural mucosal inflammation
- Fistulas, strictures and abscess
- Extraintestinal manifestations
- Cancer Risk

- Terminal ileum Medscape
Theories of IBD Pathophysiology

• Immunologic abnormalities
• Environmental factors
• Multiple genetic variations have been implicated in the pathogenesis of IBD

- Sohrabpour AA, et al. Et al. Current therapeutic Approaches in Inflammatory Bowel disease
Epidemiology IBD

• Incidence
  – More then 1.5 million cases IBD
  – UC was more common in first several decades of 20th century
  – 1950-1980’s a rise in CD and stabilization of UC
  – Currently diseases are equivalent

• Age
  – Can occur at any age, peak age 15-30 yrs with second peak for CD 50-70 yrs

• Geographic Heterogeneity
  – Incidence of IBD seems to decrease in a north-south direction, although can not be generalized

• Ethnic Differences
  – Evaluations of ethnic and racial patterns of IBD have demonstrated a higher incidence of IBD in Jews, and lower rates in black and Hispanic populations compared to whites. Although incidences are constantly changes with the impact of migration

• Cosnes,J. et al., Epidemiology and Natural History of Inflammatory Bowel Disease. Gastroenterology, May 2011, 1785-1794.
Diagnostic Approach

- Clinical suspicion of the illness based upon history, examination and screening laboratory data
- Exclusion of other illnesses that have a similar presentation
- Establishment of the diagnosis of IBD, with differentiation between CD and UC
- Localization of the region of the disease
- Identification of extraintestinal manifestations
Case Study with Diagnostic Approach to Ulcerative Colitis

- **HPI-**
  - AG is a 26 year old female who presented with left lower quadrant abdominal pain, 3-5 diarrhea bowel movements, mucus discharge and hematochezia for the past week. She denies NSAID use, recent travel, antibiotics or weight loss.

- **PMH**
  - Degenerative joint disease

- **Medication**
  - Birth control

- **Allergies-NKA**

- **Family and surgical history**
  - Denies colon cancer and IBD. No previous surgeries
AG Case Study

- Physical exam- mild left lower quadrant tenderness, no rebound tenderness
- Vitals-98.7, 70, 18, 120/70
- Imaging previously in the ER
  - CT scan with IV and oral contrast- Mild thickening in the sigmoid colon possibly secondary to early colitis
  - Labs- CMP- normal total protein 7.4, albumin 3.8, K- 4.1, CBC normal- WBC- 12.3 HGB 14.4, plt 326, CRP normal-<0.80, pregnancy test negative, U/A negative
  - Stool studies- positive for occult blood, positive WBC’s, Negative for C- Difficile, negative stool culture for E. coli, salmonella, aeromonas,shigella, campylobacter
Partial colonoscopy was performed due to erythema, friability and superficial ulcerations in proximal sigmoid colon and extending proximally. Diagnosed with mild to moderate activity.

Pathology revealed
- mild Crypt distortion, depletion of goblet cells and acute cryptitis.
- Inflammatory infiltrate of lymphocytes, plasma cells, macrophages and eosinophils involves the lamina propria. No Dysplasia

Lialda 4.8 Grams po once daily initiated
**General Endoscopic Findings with UC**

- Erythema
- Edema/loss of the usual fine vascular pattern
- Granularity of the mucosa
- Friability/spontaneous bleeding
- Pseudopolyps
- Erosions
- Ulcers

- Pancolitis and distal ileal inflammatory changes

# UC Pathology Findings

<table>
<thead>
<tr>
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<th>Ulcerative colitis</th>
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</thead>
<tbody>
<tr>
<td>Transmural mucosal inflammation</td>
<td>NO</td>
</tr>
<tr>
<td>Distorted crypt architecture</td>
<td>YES</td>
</tr>
<tr>
<td>Cryptitis crypt abscesses</td>
<td>YES</td>
</tr>
<tr>
<td>Granulomas</td>
<td>NO</td>
</tr>
<tr>
<td>Fissures and skip lesion</td>
<td>Rare</td>
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</tbody>
</table>

Baumgert, DC., Sandborn, W. Inflammatory bowel Disease clinical aspect and established and evolving therapies; Lancet 2007. 369. 1641
• From November through March she was maintained on Lialda 4.8 gms daily until symptoms worsened with bloody diarrhea, nocturnal defecation, cramping abdominal pain, passage of mucus, tenesmus. Follow up lab work revealed normal CMP, Hgb 10.4, MCV 79.5, WBC 17.2, Plt 403, CRP 0.96.

• A complete colonoscopy was performed with active disease to splenic flexure, mild to moderate activity.

• She then presented with elevated liver enzymes, generalized body aches, fever and bloody diarrhea up to 10 a day and positive ANA and SMA. Antibodies to Infliximab were negative. At this time she was not on a immunomodulator.
General Extraintestinal Manifestations

- Ocular complications
  - Episcleritis
  - Scleritis
  - Uveitis

- Peripheral arthropathies of joints
- Axilla arthropathies
  - sacrolitis
  - Ankylosing spondylitis

- Dermatological
  - Erythema nodosum

- Primary Sclerosing cholangitis (PSC)

Utility of IBD Serology and Imaging

• In AG’s case there is little use for adjunctive IBD serology to distinguish between UC and Crohn’s. Her CT scan revealed mild thickening in the sigmoid colon. Her disease endoscopically is present in the rectum extending proximally to splenic flexure. Her clinical features and the pathology supports IBD.

• Picture Courtesy of James B McGee, MD.
Serology

- Perinuclear antineutrophil cytoplasmic antibodies (pANCA)
  - Identified in 60-70% of UC patients
  - Identified 40% of CD patients
    - Not a good serology marker alone to distinguish between UC and Crohn’s as there is a low sensitivity
- CRP

Case Study with Diagnostic Approach
Crohn’s Disease

• HPI-
  – JC is a 17 year old male with minimal chronic symptoms of abdominal pain over the past two months. He presents to the ER with one week severe right lower quadrant pain and fever. No diarrhea

• PMH
  – Depression, kidney stones, asthma and allergies. Previous evaluation for appendicitis two years ago.

• Medication-
  – Advair inhaler and multivitamin
JC Case Study

- Allergies - NKA
- Family and Social History
  - Denies colon cancer and IBD. Patient does not smoke
- ROS- Pertinent positives in HPI. No weight loss
- Physical exam- Facial pallor, right lower quadrant tenderness, no rash, skin lesions or ocular complaints or arthritis
- Vitals- **101.7, 104, 70, 103/41**
  - Labs- wbc 17, hgb 12.9, MCV 77.8, albumin 3.7, crp, sed rate, Vitamin D and Vitamin B12 were not completed.
- Imaging- CT scan inflammatory changes with wall thickening, pericolonic soft issue edema and stranding, some free fluid surrounding cecum and proximal ascending colon, no obvious ileitis
JC Colonoscopy Findings

• 5 days following surgery and no improvement in symptoms the colonoscopy revealed
  – The cecum had inflamed mucosa, few superficial erosions, no active bleeding
  – The ileocecal valve edematous and inflamed and was not able to be intubated.
  – Right and left colon appeared normal and no evidence of colitis
General Endoscopic Findings for Crohn’s Disease

• Aphtous ulcers —
  — Courtesy of James B McGee, MD.

• Cobblestoning —
  — Courtesy of James B McGee, MD

• Discontinuous lesions—
  — Courtesy of James B McGee, MD

### CD Pathology Findings

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JC Clinical Course

• Small bowel follow through
• Prometheus Serology
• Remicade and prednisone
  – Continued abdominal pain
• 8 weeks post appendectomy, colonoscopy and Remicade infusions
• CT enterography
  – Thickening of ileum, increased stranding posterior to cecum, no abscess, fistula or free air and no definable small bowel abnormalities
• Surgery- Ileocelecal resection
Utility of Serologic Markers

• Serology is used to aid in the diagnosis of IBD, differentiate between UC and Crohn's or possibly indicate the severity.
  – Serology- antibodies against– Anti neutrophil cytoplasmic antibodies (ASCA), Saccharomyces Cerevisiae, CBir1 And Omp C are in evolution to provide adjunctive support for the dx of Crohn’s disease
  – Inflammation- CRP, calprotectin or lactoferrin adjunctive support to intestinal inflammation
  – Genetics- mutations continue to be researched with the goal of diagnostic guidance of disease progression, response or medical therapies

Licstein, GR., Management of Crohn’s disease in Adults; American journal Gastroenterology January 2009
Lewis, J. the Utility of Biomarkers in the Diagnosis and Therapy of Inflammatory Bowel Disease, Gastroenterology, May 2011, 1817-1826.
Diagnostic Purpose to Imaging or Endoscopy

- Explanation of symptoms or lab abnormalities
- Clarification of disease extent and severity
- Cancer screening and surveillance
- Prognosis or addition to diagnosis
- Evaluation of disease progression
**Intestinal Imaging for Inflammatory Bowel**

- Ileocolonoscopy and biopsy are the most sensitive diagnostic tool.

- The advancement in technology with MRI equipment has allowed MRI or MRE to an imaging option.

- CT scan or CT enterography

Fletcher, JG. Et. al., New Concepts in Intestinal Imaging for Inflammatory Bowel Disease. Gastroenterology, May 2011, 1795-1806
Capsule Endoscopy

Potential indications for the use of capsule endoscopy

- Suspected CD (abdominal pain, diarrhea, elevated CRP) with negative findings on upper GI and colonoscopy
- Evaluation of obscure GI bleed with negative endoscopy findings
- Evaluation of disease extent if will change management
- Evaluation of post recurrence if pt. unwilling to do colonoscopy

Contraindications to capsule endoscopy

- Clinical evidence of small bowel obstruction or pseudo obstruction
- Severe and extensive SB CD with or without stricture or fistula. (Suggest patency capsule prior)
- Caution with cardiac pacemakers or implanted electrical devices
- Swallow disorder
- Warning if previous abdominal surgeries and pregnancy

Papadkis, KA., Diagnostic Approach to Small bowel Involvement in IBD: View of endoscopist: DigDis 2009: 476-481
Quality of Life

• Goal of diagnosis with therapy in Inflammatory bowel disease is to eliminate all disease related symptoms, normalize patients quality of life and maintain a well being with minimal side effects