Clinical protocol
Atul Sachdev
GMCH, Chandigarh
Patient: K, 39yrs F, DOA: 12/6/05; DOD: 14/6/05

PRESENTING COMPLAINTS

- Bloody diarrhea 6 weeks
- Pedal edema 3 days
- Abdominal distension 3 days
- Reduced urine output 3 days
Apparently well 6 weeks back

- Loose stools - bloody, predominantly watery, large volume, 10-12 times/day with associated mucus

- Associated mild abdominal pain which was predominantly non-colicky (occasionally colicky).
3 days prior to hospitalization
- she developed increased pain, abdominal distension, bilateral pedal edema and decreased urine output
- 3 tablets of NSAIDS for headache prior to the onset of this illness

- Associated anorexia and weight loss
- No h/o joint pains/ fever/ rashes
She was seen at a private clinic where she underwent a colonoscopy and a CT scan.

Colonoscopy - multiple colonic ulcers, diagnosed as ulcerative colitis.

Treatment - nature?

Subsequently, seen at GMCH.

Diagnosed - toxic megacolon.

Referred to PGI.
Past History:

- 6 years back had fresh bleeding PR with passage of stools
- Diagnosed as hemorrhoids
- Treated with ayurvedic medication with good response.

Personal History:

- No addictions, Married and having two children
Examination

- Conscious, oriented, afebrile,
- Dehydrated, looking sick with a puffy face
- PR 130/ min, BP 80/60 mm of Hg, RR 45/ min
- Peripheral pulses were feeble
- Pallor+, B/L pitting pedal edema +
- No cyanosis, JVP elevation, clubbing, lymphadenopathy or icterus
Examination

- Abdomen:
  - Distended, tense
  - No tenderness, rebound tenderness, rigidity or guarding
  - Palpable bowel loops
  - Sluggish bowel sounds,
  - minimal free fluid.
- PR: Rectum empty, no bloody stool.
- Chest/ CVS/ CNS: WNL
## Investigations

<table>
<thead>
<tr>
<th>Date</th>
<th>12/6/05</th>
<th>13/6/05</th>
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<tbody>
<tr>
<td>Hb</td>
<td>15.4</td>
<td>9.5</td>
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<tr>
<td>TLC</td>
<td>13,000</td>
<td>48,000</td>
</tr>
<tr>
<td>DLC</td>
<td>P73L20M3E4</td>
<td>P94L4M1E1</td>
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<tr>
<td>P/S</td>
<td>N/N Plat ↓ ed</td>
<td>N/N Plat ↓ ed</td>
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<tr>
<td>Na</td>
<td>130</td>
<td>137</td>
</tr>
<tr>
<td>K</td>
<td>2.5</td>
<td>3.6</td>
</tr>
<tr>
<td>Urea</td>
<td>32</td>
<td>35</td>
</tr>
<tr>
<td>Creat</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>S Bil (T/C)</td>
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<td></td>
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<tr>
<td>RBS</td>
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</tr>
<tr>
<td>PTI</td>
<td>67%</td>
<td>50%</td>
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<tr>
<td>APTTT</td>
<td>47(C30-40)</td>
<td>58(C30-40)</td>
</tr>
<tr>
<td>PT</td>
<td>15 (C-10)</td>
<td>20 (C-10)</td>
</tr>
</tbody>
</table>
# Arterial Blood Gases

<table>
<thead>
<tr>
<th>Date</th>
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<tbody>
<tr>
<td>pH</td>
<td>7.46</td>
<td>7.34</td>
<td>7.33</td>
<td>7.34</td>
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<tr>
<td>$PO_2$</td>
<td>59</td>
<td>47</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>$PCO_2$</td>
<td>28</td>
<td>30</td>
<td>40</td>
<td>29</td>
</tr>
<tr>
<td>$SaO_2$</td>
<td>92%</td>
<td>81%</td>
<td>89%</td>
<td>85%</td>
</tr>
<tr>
<td>$HCO_3$</td>
<td>19</td>
<td>16</td>
<td>21</td>
<td>15</td>
</tr>
<tr>
<td>BE</td>
<td>-3</td>
<td>-9</td>
<td>-5</td>
<td>-8.5</td>
</tr>
</tbody>
</table>

Initially respiratory alkalosis  
Later metabolic acidosis - partially compensated  
Hypoxia
Investigations

- CPK MB: 96.5 IU/lit (N<25 IU/lit)
- Ascitic fluid: Serous, Pro 850mg%, Sugar 76, WBC 400 (P95 L5)
- Blood C/S: sterile
- EKG: HR 100/min, Junctional rhythm. Low voltage. ST ↓ T↓. Reversal on K+ Rx
- EKG: Terminally Ventricular tachycardia
- CXR: Normal ⇒ Bilateral pleural effusion⇒ atelectasis⇒ ARDS
Transverse colon 7cm. Dilated small bowel loops.

Dilated small bowel

Dilated rectum
Investigations

USG abdomen:

- Liver 17.5 cm, Increased echotexture, N hepatic veins
- Portal vein 15.5mm
- Intrahepatic biliary radicals not dilated
- Gallbladder sludge+ with normal walls
- Pancreas and retroperitoneum obscured by bowel gas
- Kidneys/ spleen normal
- Significant dilatation of bowel loops
- Ascites+ and bilateral pleural effusion
Thickened colon

Air in colon wall
Asymmetric bowel thickening
Pericolonic fat stranding
Investigations

CECT Abd
- Dilated ileal & large bowel loops
- Thickened walls
- No Lymphadenopathy
- B/L Pleural effusion
- Minimal ascites
- Diffuse involvement of rectum, sigmoid, ? transverse and ascending colon
- Thickening of all the above mentioned
- Asymmetric thickening in the ascending colon
- Presence of air in the wall of ascending colon
- Distended small bowel
Course and Management

- IV fluids, IV Cefipime, IV Ciprofloxacin, IV metronidazole, IV Hydrocortisone, blood transfusion and FFP with no significant response
- Hypokalemia - corrected with IV K⁺ infusion
- GE -1 Consultation
  - a diagnosis of ulcerative colitis with toxic megacolon
- Advised surgical consultation, intensive supportive care and addition of cyclosporine
Course and Management

- Surgical consultation (GS-III)
  - Continue conservative management - unfit for surgery, no evidence of perforation
- IV cyclosporine was added
- Intubated started on ambu ventilation
- Started on dopamine, noradrenaline and vasopressin infusions - remained hypotensive.
- Repeated ventricular arrhythmias
- Cardiac arrest from which she could not be revived
Unit’s Final Diagnosis

- Ulcerative colitis with toxic megacolon
- Refractory septic shock
- ARDS
- Liver parenchymal disease
- Bilateral pleural effusion and ascites
- 39 F with bloody diarrhoea, mucus - 6 wks (colitis)
- 3 d worsening with pedal edema, reduced urine output and abdominal distension
- Tachypnoeic, tachycardia, hypotension, dehydrated
- Pale, pedal edema
- Abdominal distension with palpable bowel loops, sluggish bowel sounds, minimal ascites
- Colonoscopy - multiple ulcers
- Dilated colon - Toxic megacolon
- Involvement of the rectum and colon with presence of air in bowel wall and asymmetric thickening of right colon
Bleeding PR - common causes

- Haemorrhoids
- Anal fissure
- Rectal or colonic polyp/polyposis
- Rectal or colonic Carcinoma
- IBD - IUC, Crohn’s disease
- Infectious causes
- Noninfectious causes
Bleeding PR - common causes

- Haemorrhoids
- Anal fissure
- Rectal or colonic polyp/polypsis
- Rectal or colonic Carcinoma
- IBD - IUC, Crohn’s disease
- Infectious causes
- Noninfectious causes

Clinical presentation
Colonoscopy - multiple ulcers
CT findings - diffuse colonic involvement
<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Frequency (%)</th>
<th>Cause</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diverticulosis</td>
<td>30</td>
<td>IUC</td>
<td>19.3</td>
</tr>
<tr>
<td>Haemorrhoids</td>
<td>14</td>
<td>Acute colitis</td>
<td>12</td>
</tr>
<tr>
<td>Ischemic</td>
<td>12</td>
<td>Polyps</td>
<td>10.2</td>
</tr>
<tr>
<td>IBD</td>
<td>9</td>
<td>Radiation colitis</td>
<td>9</td>
</tr>
<tr>
<td>Post polypectomy</td>
<td>8</td>
<td>SUR</td>
<td>7.8</td>
</tr>
<tr>
<td>Colon cancer</td>
<td>6</td>
<td>Carcinoma colon</td>
<td>7.2</td>
</tr>
<tr>
<td>Rectal ulcer</td>
<td>6</td>
<td>Colonic TB</td>
<td>4.2</td>
</tr>
<tr>
<td>Vascular ectasia</td>
<td>3</td>
<td>Enteric fever</td>
<td>3</td>
</tr>
<tr>
<td>Radiation colitis</td>
<td>3</td>
<td>Unknown</td>
<td>15</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Goenka et al IJG 1993

UCLA CURE
Differential diagnosis of colitis

Infectious causes
- Aeromonas hydrophila
- Campylobacter jejuni
- Chlamydia spp
- C difficile
- CMV
- E histolytica
- E coli O157:H7, EHEC
- HSV
- L monocytogenes
- N gonorrhoeae
- Salmonella spp
- Shigella spp
- Y enterocolitica
- TB

Noninfectious causes
- Idiopathic UC
- Crohn’s colitis
- Behcet’s disease
- Diversion colitis
- Diverticulitis
- Drugs - gold, chemotherapy, penicillamine, NSAIDs
- Eosinophilic colitis
- Graft Vs Host disease
- Ischemic colitis
- Microscopic (collagenous/lymphocytic)
- Neutropenic colitis
- Radiation colitis
- Solitary Rectal ulcer syndrome
Infectious causes

- **Shigella, EHEC, and Campylobacter spp** - exact colitis like IBD but acute onset, abdominal pain is marked, self limiting and settles in 7-10 days
- **Salmonella** - hematochezia, ileocaecal involvement, presentation different
- **Listeria** - milk consumption, acute short lasting and in epidemics
- **Yersinia, Aeromonas** - can cause chronic colitis, unusual
- **Amoebic colitis** - subacute onset, self limiting and rarely causes chronic colitis
- **N gonorrhoeae, Chlamydia** - STD, more like watery pus rather than colitis
- **HIV status ?**
Infectious causes

**C difficile** - generally follows usage of antibiotics but can occur in elderly people on PPI

- Prevalence higher in IUC in hospitalized patients
- Can cause severe colitis
- De novo severe colitis in a young female without any predisposing factors less likely
- Cause of exacerbation of underlying IUC cannot be excluded

**CMV infection** - colitis in immunocompetent patients presenting de novo unusual

- Patients of IUC on steroids or immunosuppressive can have a relapse due to CMV
- Cause of exacerbation of underlying IUC cannot be excluded
## Differential diagnosis of colitis

### Infectious causes
- Aeromonas hydrophila
- Campylobacter jejuni
- Chlamydia spp
- C difficile
- CMV
- E histolytica
- E coli O157:H7, EHEC
- HSV
- L monocytogenes
- N gonorrhoeae
- Salmonella spp
- Shigella spp
- Y enterocolitica
- TB

### Noninfectious causes
- Idiopathic UC
- Crohn’s colitis
- Behcet’s disease
- Diversion colitis
- Diverticulitis
- Drugs - gold, chemotherapy, penicillamine, NSAIDs
- Eosinophilic colitis
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- Ischemic colitis
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- Neutropenic colitis
- Radiation colitis
- Solitary Rectal ulcer syndrome
- **Diverticulitis** typically involves sigmoid colon and unusually upper rectum

- **Ischemic colitis** - elderly, water shed areas around splenic flexure or sigmoid colon

- **No surgery/radiation/chemotherapy/bone marrow transplant /drug intake**

- Bloody diarrhoea - unlike **collagenous or lymphocytic**

- Diffuse colonic involvement - **SUR** unlikely

- No genital/oral ulcers - **behcet’s**

- No hypereosinophilia
- Idiopathic ulcerative colitis
- Crohn’s colitis
- Tubercular colitis
Indian data

North Indian data shows *incidence* and prevalence rates of UC similar to the west. CD is more in South India and presents one decade later. Crohn’s colitis is more common in India.

Inflamm Bowel Dis 2010, Ind J Gastroenterol 2007
<table>
<thead>
<tr>
<th>Idiopathic ulcerative colitis</th>
<th>Crohn’s disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colon and terminal ileum</td>
<td>All parts of GIT</td>
</tr>
<tr>
<td>Mucosa and submucosa except in fulminant disease</td>
<td>All layers of the gut wall</td>
</tr>
<tr>
<td>Rectum involved in 95% pts</td>
<td>Rectum involved in 50% of colitis</td>
</tr>
<tr>
<td><strong>Rectum to caecum to terminal ileum</strong></td>
<td>Patchy involvement of GIT</td>
</tr>
<tr>
<td>Caecal patch present</td>
<td>May be absent</td>
</tr>
<tr>
<td><strong>Contiguous involvement of colon</strong></td>
<td>Discontinuous involvement</td>
</tr>
<tr>
<td>Generally no skip areas</td>
<td>Present</td>
</tr>
<tr>
<td>Terminal ileum involved - 15-20%</td>
<td>Terminal ileum involved in 75%</td>
</tr>
<tr>
<td>Perianal disease uncommon</td>
<td>Common - large anal tags, fissures, fistulas</td>
</tr>
</tbody>
</table>

CD is distinguished from UC by disease proximal to the colon, perineal disease, fistulas (25%), histologic non caseating granulomas (50%) and full thickness disease
- Rectum to caecum continuous involvement
- Incidence higher of IUC

- Most probably IUC but CD colitis cannot be excluded
What about colonic TB

Abdominal (16% of all extrapulmonary TB)

- GIT - 65-78%
- Commonest sites- ileum, ileocaecal region, followed by the colon and the jejunum
  - 196 pts - ileum in 102 & caecum in 100
  - 300 pts - ileocaecal region-162 & ileum - 89

- Isolated Colonic - 20%,
  - stricture, mass
  - Can present as colitis (unusual)
Acute presentation (10-30%)

- Intestinal obstruction - acute or acute on chronic
- Peritonitis - with or without perforation
- Acute mesenteric lymphadenitis
- Acute tubercular appendicitis
- Acute GI bleed - 2-3%

69 patients

Table 1 Clinical features on presentation

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Number of patients</th>
<th>Percentage of patients (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal pain</td>
<td>54</td>
<td>80.80</td>
</tr>
<tr>
<td>Weight loss</td>
<td>50</td>
<td>74.63</td>
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<tr>
<td>Appetite loss</td>
<td>42</td>
<td>62.69</td>
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<tr>
<td>Fever</td>
<td>27</td>
<td>40.30</td>
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<tr>
<td>Diarrhoea</td>
<td>11</td>
<td>16.42</td>
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<tr>
<td>Alternate diarrhoea and constipation</td>
<td>17</td>
<td>25.37</td>
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<tr>
<td>Bleeding per rectum</td>
<td>8</td>
<td>11.94</td>
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<tr>
<td>Abdominal mass</td>
<td>3</td>
<td>4.48</td>
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</table>

Physical examination

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Number of patients</th>
<th>Percentage of patients (%)</th>
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</thead>
<tbody>
<tr>
<td>Pallor</td>
<td>30</td>
<td>44.78</td>
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<tr>
<td>Fever</td>
<td>23</td>
<td>34.33</td>
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<tr>
<td>Abdominal tenderness</td>
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<td>37.31</td>
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<tr>
<td>Abdominal mass</td>
<td>9</td>
<td>13.43</td>
</tr>
<tr>
<td>Lymphadenopathy</td>
<td>1</td>
<td>1.49</td>
</tr>
</tbody>
</table>

Mukewar et al 2012; Clinical and Translation gastroenterology
Isolated colonic involvement and presentation as a diffuse colitis in TB is very unusual
Precipitants

- Bacterial infections
  - *Clostridium difficile* (8 times higher in hospitalised IUC)
- Viral infections
  - *CMV infection*
- Drugs - NSAIDs
- Seasonality
- Psychosocial factors
Toxic megacolon

- Non destructive dilatation of colon >6 cm
- Best visible in transverse colon
- Occurs in 5% of all severe attacks of IUC
- Mostly occurs in extensive colitis

What precipitated it?
- NSAIDs
- Hypokalemia
- ? Colonoscopy
Toxic megacolon

- Tachycardia, hypotension, abdominal distension, and tenderness and decreased bowel sounds
- Leucocytosis
- Metabolic alkalosis
- Electrolyte disturbances

Associated
- DIC (low platelets and prolonged PT, APTT)
- Metabolic acidosis (later in disease)
- Refractory shock
- Sepsis is a strong possibility in addition to ACS
Perforation or associated malignancy

- Asymmetric thickening of the right colon
- Possibly 6 yrs history
- **Could it be an Interval colorectal cancer (5%)**

**But**

- Pericolonic exudates
- Air in bowel wall
- Ascites - TLC 400 polys
- **Perforation more likely**
Liver disease

- Hepatomegaly
- Increased echoes
- Dilated portal vein
- Normal IHBR

Common hepatobiliary manifestations

- Autoimmune hepatitis
- Cholangiocarcinoma
- Pericholangitis
- Primary sclerosing cholangitis
- Hepatic steatosis
Liver disease

- Absence of LFT
- No skin rash/ joint pain

- Hepatic steatosis (long standing disease, drugs)
- + sclerosing cholangitis? Cirrhosis with portal hypertension
Terminal involvement

- Pre-terminally had repeated ventricular arrhythmias
- Persistent hypotension
- Irreversible septic shock and hypokalemia
In conclusion

- IBD - most likely IUC - pancolitis
- Toxic megacolon with abdominal compartment syndrome
- Perforation? Ascending colon
- Peritonitis
- Sepsis - DIC, ARDS
- Septic shock
- Liver parenchymal disease - PSC? Cirrhosis with portal hypertension and steatosis
### Infectious diseases mimicking IBD

<table>
<thead>
<tr>
<th>Bacterial</th>
<th>Mycobacterial</th>
<th>Viral</th>
<th>Parasitic</th>
<th>Fungal</th>
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</thead>
<tbody>
<tr>
<td>Salmonella</td>
<td>Tuberculosis</td>
<td>CMV</td>
<td>Amoebiasis</td>
<td>Histoplasmosis</td>
</tr>
<tr>
<td>Shigella</td>
<td><em>M. avium intacellulare</em></td>
<td>Herpes simplex</td>
<td>Isospora</td>
<td>Candida</td>
</tr>
<tr>
<td>Toxigenic <em>E. coli</em></td>
<td>HIV</td>
<td>T trichiura</td>
<td><em>S. stercoralis</em></td>
<td>Aspergillus</td>
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<tr>
<td>Campylobacter</td>
<td></td>
<td></td>
<td></td>
<td>Hookworm</td>
</tr>
<tr>
<td>Yersinia</td>
<td></td>
<td></td>
<td></td>
<td>Strongyloides</td>
</tr>
<tr>
<td><em>C. difficile</em></td>
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<td></td>
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<tr>
<td>Gonorhoea</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><em>C. trachomatis</em></td>
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</table>
Non infectious diseases mimicking IBD

<table>
<thead>
<tr>
<th>Inflammatory</th>
<th>Neoplastic</th>
<th>Drugs and chemicals</th>
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</thead>
<tbody>
<tr>
<td>Appendicitis</td>
<td>Lymphoma</td>
<td>NSAIDs</td>
</tr>
<tr>
<td>Diverticulitis</td>
<td>Metastatic carcinoma</td>
<td>Phosphosoda</td>
</tr>
<tr>
<td>Diversion colitis</td>
<td>Carcinoma ileum</td>
<td>Cathartic colon</td>
</tr>
<tr>
<td>Collagenous/lymphocytic colitis</td>
<td>Carcinoid</td>
<td>Gold</td>
</tr>
<tr>
<td>Ischemic colitis</td>
<td>Familial polyposis</td>
<td>Oral contraceptive</td>
</tr>
<tr>
<td>Radiation colitis</td>
<td></td>
<td>Cocaine</td>
</tr>
<tr>
<td>Solitary rectal ulcer syndrome</td>
<td></td>
<td>Chemotherapy</td>
</tr>
<tr>
<td>Eosinophilic gastroenteritis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neutropenic colitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behcet’s syndrome</td>
<td></td>
<td></td>
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<tr>
<td>Graft vs Host disease</td>
<td></td>
<td></td>
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<tr>
<td>Ulcerative colitis</td>
<td>Crohn’s disease</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>-------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Rectal bleeding or bloody diarrhoea</td>
<td>Bleeding only with colitis</td>
<td></td>
</tr>
<tr>
<td>Tenemus +</td>
<td>May be present if rectum involved</td>
<td></td>
</tr>
<tr>
<td>Lower abdominal cramps</td>
<td>Periumbilical cramps/right iliac fossa pain</td>
<td></td>
</tr>
<tr>
<td>Abdominal Mass uncommon</td>
<td>May be present in right iliac fossa</td>
<td></td>
</tr>
<tr>
<td>Intestinal obstruction uncommon - strictures suggest adenocarcinoma</td>
<td>Common with stenotic lesions</td>
<td></td>
</tr>
<tr>
<td>Malabsorption uncommon</td>
<td>Can present as malabsorption - isolated jejunoileitis</td>
<td></td>
</tr>
<tr>
<td>Presentation as PUO - uncommon</td>
<td>May present</td>
<td></td>
</tr>
<tr>
<td>Fistulas - external /internal uncommon except rectovaginal</td>
<td>Internal/external fistulas including perianal -25%</td>
<td></td>
</tr>
</tbody>
</table>

CD is distinguished from UC by disease proximal to the colon, perineal disease, fistulas (25%), histologic non caseating granulomas (50%) and full thickness disease
Mode of presentations

- Acute: 10%
- Chronic: 70%
- Acute on chronic: 20%

Asia- Pacific

- UC incidence is increasing with some exceptions
  - ? True increase or increased awareness
- UC incidence is lower as compared to the west with a few exceptions
- Incidence of UC is higher than CD
- Low prevalence areas of IBD have more of UC and CD follows
- High prevalence areas have more of CD relatively

AP consensus on UC -J Gastroenterology Hepatology 2010