Infective Pathology in the Intestines

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Overview

• Classical infective colitis.
  – Typical histological features of infective colitis.
  – Microscopic features IBD versus infective colitis.

• Atypical infective colitis.

• Infection complicating ulcerative colitis.

• Infective intestinal pathology in the immunocompromised patient.

• Parasitic infections
Classical infective colitis
(Acute infective colitis)
Typical histological features of infective colitis.
Typical acute infective colitis

- Preserved crypt architecture
- Increased inflammatory cell infiltrate in the superficial lamina propria
- Cryptitis with withered crypts and ‘beaded’ crypt abscesses
- Patchy inflammation.
Typical acute infective colitis

- Preserved crypt architecture
- Increased inflammatory cell infiltrate in the superficial lamina propria
- Cryptitis with withered crypts and ‘beaded’ crypt abscesses
- Patchy inflammation.
Microscopic features IBD versus infective colitis.
“Consensus” criteria favouring UC over infective colitis.

- Architectural changes
  - Distorted crypt architecture
  - Crypt atrophy
  - Villous surface epithelium
- Cellular changes
  - Paneth cell metaplasia
- Inflammatory changes:
  - Increased plasma cell/lymphocyte infiltrate
  - Basal lymphoid aggregates
“Consensus” criteria favouring UC over infective colitis.

- Architectural changes
  - Distorted crypt architecture
  - Crypt atrophy
  - Villous surface epithelium
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  - Paneth cell metaplasia
- Inflammatory changes:
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  - Basal lymphoid aggregates

Using such criteria:

Sensitivity 97%
Specificity 97%

Amoebic colitis
“Consensus” criteria favouring UC over infective colitis.

- Architectural changes
  - Distorted crypt architecture
  - Crypt atrophy
  - Villous surface epithelium

- Cellular changes
  - Paneth cell metaplasia

- Inflammatory changes:
  - Increased plasma cell/lymphocyte infiltrate
  - Basal lymphoid aggregates
Crypt architectural abnormalities

• Take 6 weeks to develop.

• May not be present in early UC, particularly in children.
Atypical infective colitis.
Atypical infective colitis.

- Enteric pathogens
  - Shigella
  - Salmonella
  - Aeromonas (occasionally)
  - *Entamoeba histolytica*

- Granulomatous colitis
  - Tuberculosis
  - Yersiniosis

- Sexually transmitted diseases
  - Syphilis
  - Lymphogranuloma venereum
## Lamps LW. Update on infectious enterocolitides and the diseases that they mimic. Histopathology 2015, 66, 3–14.

**Table 1.** Classification of selected gastrointestinal infections by histological pattern

<table>
<thead>
<tr>
<th>Minimal or no inflammatory changes</th>
<th>Acute infectious-type colitis pattern</th>
<th>Architectural distortion</th>
<th>Prominent necrosis and ulceration</th>
<th>Ischaemic-type pattern</th>
<th>Pseudomembranes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vibrio cholera</strong></td>
<td><em>Shigella</em> species</td>
<td><em>S. typhi</em></td>
<td>Enterohaemorrhagic <em>E. coli</em></td>
<td>Enterohaemorrhagic <em>E. coli</em></td>
<td>Enterohaemorrhagic <em>E. coli</em></td>
</tr>
<tr>
<td>Enteropathogenic and enteroadherent <em>E. coli</em></td>
<td><em>Campylobacter</em> species</td>
<td><em>Shigella</em> species</td>
<td><em>C. perfringens</em></td>
<td><em>C. perfringens</em></td>
<td><em>Shigella</em> species</td>
</tr>
<tr>
<td><strong>S. aureus</strong></td>
<td><em>Aeromonas</em> species</td>
<td><em>Aeromonas</em> (occasionally)</td>
<td>Tularemia</td>
<td>CMV</td>
<td><em>C. difficile</em></td>
</tr>
<tr>
<td>Enteric viruses</td>
<td>Non-typhoid <em>Salmonella</em></td>
<td>Amoebiasis</td>
<td><em>Listeria</em></td>
<td>Listeria</td>
<td>Listeria Anthrax</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Anthrax</td>
<td>Vasotrophic fungi</td>
<td></td>
</tr>
</tbody>
</table>


Morphological appearances in Shigella and Salmonella colitis

- Non-specific histological appearances
- Mild crypt distortion 26%
- Crypt branching 21%
- Increased chronic inflammatory cells +/- acute 62%

Rectal biopsies - ? Microscopic colitis
Salmonella mbandaka
Intestinal tuberculosis
Yersiniosis.
Sexually transmitted diseases.
Historical increases in STDs in male homosexual population (MSM)

- Introduction of highly active antiretroviral therapies (HAART) 1996.
- Serosorting (sexual partners chosen on basis of HIV serostatus).
Figure 1  Trends in rates* of diagnoses of HIV and other sexually transmitted infections in men who have sex with men. England and Wales 1997-2002 by year and region of diagnosis.

Macdonald, N et al. Sex Transm Infect 2004; 80:492-497
Basal lymphoid aggregates
Mild to moderate crypt architectural distortion with crypt shortening.
Areas of superficial mucosal ulceration.
Syphilis serology:

TPHA - +ve
RPR - 1/16 +ve → Consistent with active infection.
FTA - +ve
32 year old male presented bloody diarrhoea
? IBD
Same patient 8 weeks later
Same patient 8 weeks later

→ Lymphogranuloma Venereum
Table 2 | Summary of histological features of rectal biopsies and diagnostic timeline from 12 HIV positive men subsequently diagnosed with LGV proctitis

<table>
<thead>
<tr>
<th>Case no.</th>
<th>Time between biopsy &amp; LGV diagnosis (months)</th>
<th>Mucosal ulcers</th>
<th>Cryptitis</th>
<th>Crypt abscess</th>
<th>Crypt distortion</th>
<th>Granuloma</th>
<th>Plasma cell infiltrate</th>
<th>Giant cells present</th>
<th>Initial histological diagnoses/suggestions</th>
<th>Mode of initial LGV diagnosis</th>
<th>LGV DNA results from biopsy (date of biopsy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Uncertain aetiology Possible IBD</td>
<td>Rectal swab LGV Positive</td>
<td>LGV Positive (September 2004) Negative (December 2002 &amp; June 2003)</td>
</tr>
<tr>
<td>2</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>?IBD ?infective</td>
<td>Rectal swab LGV Positive</td>
<td>LGV Positive (May 03)</td>
</tr>
<tr>
<td>3</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>?Due to prolapse ?IBD</td>
<td>Rectal swab LGV Positive</td>
<td>Negative</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Uncertain aetiology</td>
<td>Clinical &amp; Serology WIF titre = 1:4000</td>
<td>Negative (September 2004) Inhibitory (December 2003)</td>
</tr>
<tr>
<td>5</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>?Infective ?Crohn's</td>
<td>Rectal swab LGV Positive</td>
<td>Positive</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Exclude LGV</td>
<td>Clinical Rectal swab CT detected, not sent for LGV testing</td>
<td>LGV Positive</td>
</tr>
<tr>
<td>7</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Favours infective aetiology</td>
<td>Rectal swab LGV Positive</td>
<td>Negative (September 2004 and January 2005)</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>?IBD. Exclude CT/LGV</td>
<td>Clinical &amp; Serology CFT titre = 1:512 WIF titre = 1:4000</td>
<td>LGV Positive (March 2005) Negative (June 2005)</td>
</tr>
<tr>
<td>10</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Diagnosed Crohn's 1999, thought to be recurrence</td>
<td>Rectal swab LGV Positive</td>
<td>Negative (November 2005)</td>
</tr>
<tr>
<td>12</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>?Early ulcerative colitis</td>
<td>Rectal swab LGV Positive</td>
<td>Negative</td>
</tr>
</tbody>
</table>

Lymphogranuloma Venereum

- Classically – penile lesion with suppurative inflammatory reaction in inguinal nodes.

- Rectum and colon:
  - Presents with tenesmus and constipation.
  - Distal proctocolitis.
  - Perianal abscesses and fistulæ.
  - Anorectal scarring and stenosis.

- Histology – May mimic Crohn’s (granulomas)

- Diagnosis – serology, PCR from anal swab.
Lymphogranuloma Venereum

- *Chlamydia trachomatis*.
- Previously largely disease of tropics.
- Netherlands MSM population
  - 2001: 5 cases
  - 2003: 30 cases
  - 2004: 62 cases
- Minor epidemic in western world
Ongoing epidemic of lymphogranuloma venereum in HIV-positive men who have sex with men: how symptoms should guide treatment

Mohrmann, Gerrit¹; Noah, Christian¹; Sabranski, Michael²; Sahly, Hany¹ and Stellbrink, Hans-Jürgen²

Abstracts of the HIV Drug Therapy Glasgow Congress 2014
Infection complicating ulcerative colitis.
Infection complicating pre-existing ulcerative colitis

- UC patients often immunocompromised → same/increased risk of infectious colitis as general population.

- Organisms thought to complicate/exacerbate UC:
  - Salmonella
  - Clostridium difficile
  - CMV
Indeterminate colitis
Summit lesion  Eruptive/volcano lesion
Pseudomembranous colitis exacerbating chronic ulcerative colitis
Acute exacerbation of ulcerative colitis - refractory to medical therapy