Core Curriculum:
Impact of HIV on Gastroenterology/Hepatology

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University of Louisville
Case

48 year old man presents with a history of:

- dysphagia
- odynophagia
- weight loss

EGD was done to evaluate the problem
Extensively scarred esophageal mucosa with mucosal bridging. Distal esophageal nodules with superficial ulceration
Case – Esophageal Nodule Biopsy

- Inflammatory lesion with ulcerated mucosa

- Special stains for fungi reveal non-septate branching hyphae consistent with MUCOR
Case

The patient was HIV positive!!
HAART
(Highly Active Anti Retroviral Therapy)

HIV/AIDS

Before HAART  After HAART
HIV/AIDS

Before HAART
- Immune dysfunction
- Opportunistic Infections
  - Prevention
  - Management
- Neoplasms
  - Management

After HAART
- Immune reconstitution
- Management of chronic diseases e.g. Hepatitis C Cirrhosis
- Management of drug side effects
General Considerations for GI symptoms in AIDS

- Clinical signs and symptoms seldom correlate with specific diagnosis
- If patient is on HAART – etiology is usually non-opportunistic or drug induced
- Likely diagnoses based in extent of immunocompromise  
  - CD4 < 100 favors CMV, fungi, mycobacterium avium complex (MAC) while CD4 > 200 favors common bacteria and other non-opportunistic infections
In AIDS, GI pathogens are a part of a systemic infections

Early endoscopy is key in certain settings

Multiple infections are common

Evidence of tissue invasion → hallmark of pathogenicity
General Considerations for GI symptoms in AIDS

- Recurrence of opportunistic infections is common → maintenance antimicrobial may be needed unless HAART is initiated
- Treatment of all opportunistic disorders should include HAART
HIV/AIDS in Gastroenterology

- Odynophagia and Dysphagia
- Abdominal Pain
- Diarrhea
- Anorectal Disease
- Abnormal LFT
- Viral Hepatitides and HIV
Differential Diagnosis of Dysphagia and Odynophagia in AIDS

AIDS related esophageal disease
- Candida albicans*
- Cytomegalovirus*
- Idiopathic ulcerations*
- Herpes simplex
- Histoplasma capsulatum
- Mycobacterium avium complex
- Cryptosporidium spp.
- Neoplasm: Kaposi's sarcoma, lymphoma, squamous cell carcinoma, adenocarcinoma

Non-AIDS esophageal disease
- Gastroesophageal reflux
- Pill-induced esophagitis

* More common

Feldman: Sleisenger & Fordtran's Gastrointestinal and Liver Disease, 8th ed.
Candida albicans

- Most frequent esophageal infection in AIDS
- May occur during primary HIV infection (transient immunosuppression)
- Oral thrush → PPV for esophagitis = 90%
  NPV for esophagitis = 82%
- Frequently coexists with other disorders
Clinical presentation:
- Substernal dysphagia
- Odynophagia – usually not very severe

Diagnosis – by EGD
- Focal or diffuse plaques in association with mucosal hyperemia and friability
Candida esophagitis
Candida albicans

Histopathology: Desquamated epithelial cells with yeast forms present only in the superficial epithelium

Esophageal squamous mucosa with numerous pseudohyphae admixed within an acute inflammatory exudate
Candida albicans

Treatment:

- Fluconazole
  - 200 mg loading dose
  - 100 mg every day
- Narcotics for pain
- Caspofungin may be used in resistant cases
- Relapse can be prevented by HAART
CMV esophagitis

Clinical Presentation:
- Odynophagia or substernal chest pain – usually severe
- Dysphagia is less common compared to Candida
- Fever – reported occasionally
- Associated Candida infection - common
CMV esophagitis

Diagnosis – EGD:
- Extensive large and deep ulcers
- Biopsy – base of ulcer provides the highest yield
- Biopsy more sensitive than culture
CMV Esophagitis

Cytomegalovirus and herpes simplex virus esophagitis. Multiple pathogens are frequently found in patients with AIDS.

CMV esophagitis

Histopathology –

- Viral cytopathic effects in mesenchymal and/or endothelial cells in granulation tissue.
- Intranuclear inclusion bodies (Owls-eye) may be absent
  → confirmation by immunohistochemistry
Treatment:

- Ganciclovir – 14-28 days
- Foscarnet – 14-28 days
- Cidofovir – 14-28 days
- HAART

CMV esophagitis
HIV associated - Idiopathic ulcers

Clinical Presentation and EGD findings:

- Identical to CMV esophagitis
- Odynophagia worse than dysphagia
- Multiple large deep raised ulcers on endoscopy – punched-out appearance, normal intervening mucosa
HIV associated - Idiopathic ulcers

HIV associated - Idiopathic ulcers

Diagnostic criteria:

- Endoscopic and histopathologic ulcer
- No viral cytopathic effect, negative immunohistochemistry for CMV
- No clinical or endoscopic evidence of reflux disease or pill-induced esophagitis
HIV associated - Idiopathic ulcers

Treatment:

- Prednisone 40 mg/day tapered over 4 weeks is more than 90% effective
- Thalidomide
  - when Prednisone fails
  - also very highly effective
Herpes simplex esophagitis

Not common in AIDS – also seen in immunocompetent patients

HSV type I as well as HSV type II can cause

Shallow ulcers as opposed to CMV

Discrete vesicles → shallow ulcers → coalesce into regions of diffuse shallow ulcerations
Herpes simplex esophagitis

Shallow ulceration with islands of normal-appearing esophageal mucosa

Feldman: Sleisenger & Fordtran's Gastrointestinal and Liver Disease, 8th ed.
Herpes simplex esophagitis

Diagnosis:
- Biopsies are taken from ulcer edge
- Biopsies, cytologic brushings (also from ulcer edge) as well as culture of biopsy specimen are sensitive
- Histopathology – nuclear changes typical for Herpes virus infection in epithelial cells

Treatment:
- Acyclovir – 5-10 days
HIV/AIDS in Gastroenterology

- Odynophagia and Dysphagia
- Abdominal Pain
- Diarrhea
- Anorectal Disease
- Abnormal LFT
- Viral Hepatitides and HIV
Abdominal Pain

- In most patients with AIDS, abdominal pain when severe is related to HIV and its consequences.
- However, also consider the most common causes of abdominal pain in the general population.
- Use ultrasonography and CT scanning early in the assessment of abdominal pain.
In patients with pancreatitis – consider drug induced disease

Indications for surgical intervention are the same as general population

All surgical specimens should be submitted for

- Viral cultures
- Fungal cultures
- Histopathology
- Mesenteric nodes should be biopsied
## Differential Diagnosis of Abdominal Pain in AIDS

<table>
<thead>
<tr>
<th>Organ</th>
<th>Causes</th>
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</thead>
<tbody>
<tr>
<td><strong>Stomach</strong></td>
<td></td>
</tr>
<tr>
<td>Gastritis</td>
<td>CMV*, Cryptosporidium</td>
</tr>
<tr>
<td>Focal ulcer</td>
<td>CMV*, acid peptic disease</td>
</tr>
<tr>
<td>Outlet obstruction</td>
<td>Cryptosporidium, CMV, lymphoma</td>
</tr>
<tr>
<td>Mass</td>
<td>Lymphoma, KS, CMV</td>
</tr>
<tr>
<td><strong>Small bowel</strong></td>
<td></td>
</tr>
<tr>
<td>Enteritis</td>
<td>Cryptosporidium*, CMV, MAC</td>
</tr>
<tr>
<td>Obstruction</td>
<td>Lymphoma*, KS</td>
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The differential diagnosis does not include non-AIDS specific conditions

* More frequent

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<td>CMV, enteric bacteria*, HSV</td>
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<tr>
<td>Obstruction</td>
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<td>Perforation</td>
<td>CMV*, lymphoma, HSV</td>
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<td>Appendicitis</td>
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</tr>
<tr>
<td><strong>Anorectum</strong></td>
<td></td>
</tr>
<tr>
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<td>HSV*, bacteria, CMV</td>
</tr>
<tr>
<td>Tumor</td>
<td>KS, lymphoma, condyloma</td>
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dDI = didanosine; HSV = herpes simplex virus; KS = Kaposi's sarcoma; MAC = Mycobacterium avium complex

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<tr>
<td><strong>Biliary tract</strong></td>
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<tr>
<td>Cholecystitis</td>
<td>CMV*, Cryptosporidium,* Microsporidium</td>
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<td>Papillary stenosis</td>
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<td>Cholangitis</td>
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### Differential Diagnosis of Abdominal Pain in AIDS

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| Mesentery, peritoneum | Infiltration | MAC*, Cryptococcus, KS, lymphoma, histoplasmosis, tuberculosis, coccidioidomycosis, toxoplasmosis |

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# Evaluation of Abdominal Pain Syndromes in AIDS

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HIV/AIDS in Gastroenterology

- Odynophagia and Dysphagia
- Abdominal Pain
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- Abnormal LFT
- Viral Hepatitides and HIV
Diarrhea

- Before HAART seen in 90% of patients
- Remains common – etiology most often drug induced
- In AIDS:
  - alteration in mucosal immune system
  - untreatedable chronic infection by usually benign organisms
  - more virulent course of common infections
Differential Diagnosis of Diarrhea in AIDS

**Protozoa**
- Microsporidium[*]
- Cryptosporidium[*]
- Isospora belli
- Toxoplasma
- Giardia lamblia
- Entamoeba histolytica
- Leishmania donovani
- Blastocystis hominis
- Cyclospora sp.
- Pneumocystis carinii

**Bacteria**
- Clostridium difficile
- Salmonella[*]
- Shigella[*]
- Campylobacter[*]
- MAC
- Mycobacterium tuberculosis
- Small bowel bacterial overgrowth
- Vibrio spp.

* More frequent. MAC = *Mycobacterium avium* complex.
Differential Diagnosis of Diarrhea in AIDS

Viruses
- Cytomegalovirus[*]
- Herpes simplex
- Adenovirus
- Rotavirus
- Norovirus
- HIV?

Fungi
- Histoplasmosis
- Coccidioidomycosis
- Cryptococcosis
- Candidiasis

Neoplasms
- Lymphoma
- Kaposi's sarcoma

Idiopathic
- “AIDS enteropathy”

Drug-induced
- HIV protease inhibitors

Pancreatic disease
- Pancreatic insufficiency
- Chronic pancreatitis
- Infectious pancreatitis (CMV, MAC)
- Drug-induced pancreatitis (e.g., pentamidine)

* More frequent. MAC = Mycobacterium avium complex.

Feldman: Sleisenger & Fordtran's Gastrointestinal and Liver Disease, 8th ed.
Cryptosporidium

- Protozoa – most prevalent diarrheal pathogen
- Cryptosporidium – most frequent protozoa identified
- Small bowel most common site
Cryptosporidium

Clinical Presentation:
- Severe diarrhea – several liters/day stools
- Borborygmi
- Nausea
- Weight loss
- RUQ pain – suggests biliary tract involvement
Cryptosporidium

**Diagnosis:**
- Acid fast stain of stools – bright red spherules
- Small bowel or rectal biopsies – more sensitive

**Treatment:**
- Parmomycin
- HAART
- Nitazoxanide/Azithromycin ➔ mixed results
- Symptomatic
  - Fluid support
  - Antidiarrheal – occasionally narcotic
Microsporidium

- Common in the US
- Two species implicated:
  - Enterocytozoon bienusi
  - Encephalitozoon intestinalis
- Infection associated with severe immunodeficiency – CD4 < 100
Clinical Presentation:
- Watery non-bloody diarrhea – mild to moderate
- Usually no abdominal cramping
- Weight loss (not as much as cryptosporidium)

Diagnosis:
- Stool stains – only moderately sensitive
- Small bowel biopsy → better – more sensitive with Brown-Brenn, Gram or Trichrome stain
Pathogenesis is poorly defined
Little tissue inflammation
Rare villous atrophy or cell degeneration

Small bowel microsporidiosis – shedding epithelial cell containing microsporidial oocysts

From Gazzard BG: Diarrhea in human immunodeficiency virus antibody-positive patients. Semin Gastroenterol 2:3, 1991
Microsporidium

Treatment:

- *Encephalitozoon intestinalis* – albendazole
- *Enterocytozoon bienusi* – no effective treatment
- HAART – resolution of diarrhea and loss of pathogen from stool and small bowel biopsy
Isospora belli

- Endemic in Haiti
- Rare in US
- Diagnosis
  - Acid fast stain of stool, duodenal aspirate
  - Duodenal biopsy
- Treatment - effective
  - Sulfonamides
  - Pyrimethamine
  - Ciprofloxacin
CMV in small and large bowel

- CMV is the most commonly identified pathogen in AIDS
- It is the most common cause of viral diarrhea
- Most frequent cause of chronic diarrhea in AIDS with multiple negative stool studies
- CD4 count < 100
- Colon is most common site of infection (concomitant disease in esophagus, SB, stomach possible)
CMV in small and large bowel

Clinical Presentations:
- Asymptomatic carrier
- Weight loss and fever
- Abdominal pain without diarrhea (usually in SB infection)
- Watery non-bloody diarrhea
- Hematochezia
- Abdominal pain with chronic diarrhea (most common in colitis)
CMV in small and large bowel - Pathology

- Focal enteritis
- Focal colitis
- Appendicitis
- Diffuse ulcerating hemorrhagic inflammation
- Perforation
- Infection of vascular endothelial cells – possible role for mucosal ischemia
CMV Colitis

Diagnosis:

- Endoscopic biopsy
- Cultures – less sensitive than histopathology
- Histopathology
  - Viral cytopathic effect
  - Immunohistochemistry
- Disease vs. Colonization (few viral inclusions in macroscopically normal tissue)
CMV Colitis

Cytomegalovirus colitis
Edema and diffuse subepithelial hemorrhage in sigmoid colon

Feldman: Sleisenger & Fordtran's Gastrointestinal and Liver Disease, 8th ed.
CMV Colitis

Treatment:

- Ganciclovir – IV daily
- Valganciclovir – oral, not well studied for GI
- Foscarnet – IV daily
- Cidofovir – IV weekly (less studied for GI)
- Duration – 14-28 days or more
- HAART
- Ophthalmologic evaluation must
Idiopathic AIDS Enteropathy

- Diarrhea with no identifiable pathogen in AIDS
- Indirect effect of HIV on enteric homeostasis
- HIV not demonstrated in epithelial cell
- Improved technology and ‘panendoscopy with biopsy’ → decreased reliance on this diagnosis
- Improves with protease inhibitors
Common Bacterial infections

- Salmonella, Shigella, Campylobacter – increased virulence, bacteremia, Abx resistance
- High fever, severe abdominal pain, diarrhea (possibly bloody)
- Diagnosis – stool cultures
- Treatment – empiric antibiotic while stool cultures pending – e.g. – ciprofloxacin
Clostridium difficile

- High prevalence due to high antibiotic use and frequent hospitalizations – not an OI
- Clinical presentation, response to therapy and relapse rate – no different than in immunocompetent patient
- Treatment – Metronidazole, vancomycin
  → generally effective
Mycobacterium avium complex

Clinical Presentation:
- Asymptomatic infection
- Diarrhea
- Abdominal pain
- Weight loss
- Malabsorption
- GI bleed (rare)
- Obstruction (rare)
Mycobacterium avium complex

**Diagnosis:**
- **Endoscopy** – yellow mucosal nodule in duodenum (duodenal involvement most common)
- **Endoscopic biopsy** – most sensitive
- **Fecal acid fast smear** – low sensitivity
- **Blood culture**
Mycobacterium avium complex

A = H&E stain – small bowel biopsy shows marked thickening of the villi with a cellular infiltrate.

B = High-power view with acid-fast staining shows numerous macrophages filled with mycobacteria

Feldman: Sleisenger & Fordtran's Gastrointestinal and Liver Disease, 8th ed.
Mycobacterium avium complex

Treatment:
- Multidrug therapy with combinations of:
  - Amikacin
  - Ethambutol
  - Rifampin
  - Clarithromycin
  - Ciprofloxacin
- HAART
  - Early resolution
  - No long term Abx therapy
GI - Mycobacterium tuberculosis

- Less common in US
- Ileo-cecal region, colon, rectum, peritoneal involvement
- Fistula, intussusception, perforation
- Responds to multidrug antituberculous therapy
- **Immune reconstitution syndrome** – exuberant inflammatory response to quiescent pathogen on institution of HAART (also MAC lymphadenitis, CMV uveitis, Hepatitis B)
GI - Histoplasmosis

- Usually with disseminated infection with hepatic and pulmonary involvement
- Diffuse, large ulceration with diarrhea / mass / serosal disease (peritonitis)
- High fever with marked elevation of LDH
- Diagnosis – fungal smear & culture of blood, urine, infected tissue
- IV amphotericin $\rightarrow$ suppressive therapy with itraconazole
- HAART
Evaluation of Diarrhea in AIDS

In all patients
- Stool for bacterial culture: Salmonella, Shigella, Campylobacter
- Stool for fecal leukocytes,
- Stool for O & P examination (at least 3-6 specimens) and acid-fast stain
- Clostridium difficile toxin in stool

If patient has rectal bleeding, tenesmus, or fecal leukocytes
- Flexible sigmoidoscopy or colonoscopy with biopsy of mucosa for pathology, viruses, protozoa
- Cultures of rectal tissue for bacteria (especially Campylobacter); viruses (optional)

If diarrhea and weight loss persist and above evaluation is negative
- Upper endoscopy with small bowel mucosal biopsy

Feldman: Sleisenger & Fordtran's Gastrointestinal and Liver Disease, 8th ed.
### Specific Treatment of Diarrhea in AIDS

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<thead>
<tr>
<th>Bacteria</th>
<th>Treatment</th>
<th>Duration (days)</th>
</tr>
</thead>
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<td><em>Bacteria</em></td>
<td>* Duration of therapy dictated by immune reconstitution with highly active antiretroviral therapy</td>
<td></td>
</tr>
<tr>
<td>Salmonella, Shigella, Campylobacter</td>
<td>Fluoroquinolone (e.g., ciprofloxacin)</td>
<td>10-14*</td>
</tr>
<tr>
<td>Clostridium difficile</td>
<td>Vancomycin, metronidazole</td>
<td>10-14</td>
</tr>
<tr>
<td>Small bowel bacterial overgrowth</td>
<td>Metronidazole, ciprofloxacin</td>
<td>10-14</td>
</tr>
<tr>
<td>Mycobacterium tuberculosis</td>
<td>Isoniazid, rifampin, pyrazinamide, ethambutol</td>
<td>9-12 mo</td>
</tr>
<tr>
<td>Mycobacterium avium complex</td>
<td>Multidrug regimens for symptomatic infection</td>
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<td>Ganciclovir</td>
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<td><strong>Fungi</strong></td>
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<td>Histoplasmosis</td>
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<td>Amphotericin B; then itraconazole</td>
<td>28</td>
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<tr>
<td>Coccidioidomycosis</td>
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## Specific Treatment of Diarrhea in AIDS

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<td>Cryptosporidia</td>
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<td>Cyclospora</td>
<td>Trimethoprim-sulfamethoxazole or ciprofloxacin</td>
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<td>Isopora belli</td>
<td>Trimethoprim-sulfamethoxazole or ciprofloxacin or pyrimethamine</td>
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<tr>
<td>Microsporidia</td>
<td>Albendazole (Encephalitozoon intestinalis)</td>
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<td>Metronidazole, atovaquone, fumagillin (not available in United States) (Enterocytozoon bienusi)</td>
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HIV/AIDS in Gastroenterology

- Odynophagia and Dysphagia
- Abdominal Pain
- Diarrhea
- Anorectal Disease
- Abnormal LFT
- Viral Hepatitis and HIV
Anorectal Disease

- Frequent in AIDS patient
- Frequency in homosexual patients is higher than other AIDS patients
- Important to examine the anorectal region
- Common findings include:
  - Perirectal abscesses
  - Anal fistulas
  - Perianal HSV
  - Ulceration – idiopathic, CMV, tuberculosis, histoplasmosis
  - Infectious proctitis
  - Lymphoma
# Differential Diagnosis of Anorectal Disease in AIDS Infections

## Bacteria
- Chlamydia trachomatis*
- Lymphogranuloma venereum
- Neisseria gonorrhoeae*
- Shigella flexneri
- Mycobacterium tuberculosis

## Protozoa
- Entamoeba histolytica
- Leishmania donovani

## Viruses
- Herpes simplex*
- Cytomegalovirus*
- Cytomegalovirus*

## Fungi
- Candida albicans
- Histoplasma capsulatum

## Neoplasms
- Lymphoma*
- Kaposi's sarcoma
- Squamous cell carcinoma
- Cloacogenic carcinoma
- Condyloma acuminatum

## Other
- Idiopathic ulcers*
- Perirectal abscess, fistula*

* More frequent

Feldman: Sleisenger & Fordtran's Gastrointestinal and Liver Disease, 8th ed.
HIV/AIDS in Gastroenterology

- Odynophagia and Dysphagia
- Abdominal Pain
- Diarrhea
- Anorectal Disease
- Abnormal LFT
- Viral Hepatitis and HIV
Liver Disease in HIV

- In the HAART era, liver disease has become a very important cause of morbidity and mortality in HIV patients.
- Liver related complications are the most common reason for hospitalization in HIV patients.
- End-stage liver disease is a leading cause of death in HIV patients.
- There is a high prevalence of HIV and Hepatitis C/Hepatitis B co-infections.
Abnormal LFT

- Hepatic Parenchymal Disease
- Biliary Disease
Differential Diagnosis of Abnormal Liver Tests/Hepatomegaly in AIDS

Hepatic parenchymal disease

- **Infection**
  - Mycobacterium avium complex
  - Cytomegalovirus
  - Hepatitis C
  - Bacillary peliosis hepatis
  - Mycobacterium tuberculosis
  - Cryptococcus
  - Hepatitis B, D
  - Pneumocystis carinii
  - Microsporidium

- **Drug-induced[*]**
  - Sulfonamides
  - Protease inhibitors

- **Neoplasm**
  - Lymphoma
  - Kaposi's sarcoma

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Differential Diagnosis of Abnormal Liver Tests/Hepatomegaly in AIDS

Biliary disease

- **Cholangitis**
  - Cytomegalovirus
  - Cryptosporidium
  - Microsporidium

- **Neoplasm**
  - Lymphoma
  - Kaposi's sarcoma.
Drug-induced liver injury in HIV

- Most prevalent cause of liver test abnormalities
- Etiology
  - Antiretroviral meds, other prescription and non-prescription meds, herbal remedies
  - Before HAART – sulfonamides (showed increased freq of DILI in AIDS)
  - HAART era – Protease inhibitors (#1 - ritonavir)
Drug-induced liver injury in HIV

Mechanism
- Allergic
- Idiosyncratic
- Exacerbation of underlying viral hepatitis
- Immune reconstitution syndrome
- Interaction with other agents of liver injury like NASH, alcohol abuse or other illicit drug abuse
Drug-induced liver injury in HIV

- Usually hepatocellular pattern of injury
- Increased transaminases
- Jaundice is uncommon except with indinavir
Lactic Acidosis Syndrome

- Marked hepatomegaly, steatosis, metabolic lactic acidosis and liver failure
- Etiology – nucleoside reverse transcriptase inhibitors (AZT, dDI, stavudine)
- Impaired mitochondrial DNA synthesis
- Associated – myopathy, peripheral neuropathy, pancreatitis
- Most patients – worsening disease → death
- Curative treatment – liver transplantation
Hepatitis B and HIV

- Higher rate of hepatitis B chronicity
- Higher level of HBV replication (higher viral load)
- Lower rate of spontaneous loss of HBeAg and seroconversion to antiHBe Ab
- Lower rate of spontaneous loss of HBsAg and spontaneous seroconversion to antiHBs Ab
- Reappearance of HepBsAg in HIV patients previously with antiHepBs Ab due to immunodeficiency (reinfection or reactivation)
Hepatitis B and HIV

Contradictory data on activity of inflammation in HBV–HIV coinfections –

- Initial studies in MSM show less severe necro-inflammation in HBV-HIV (less AST/ALT)
- Some studies – no impact of HIV on Hep B progression
- Other studies – more rapid progression to cirrhosis and higher rate of decompensation of cirrhosis in HIV-HBV coinfected
- Recent study in MSM showed HIV-HBV coinfected at greater risk of liver related death compared to HIV or HBV alone
Hepatitis B and HIV - Treatment

- Patients who need anti-HBV but no anti-HIV therapy
  - Avoid HIV-active HBV agents (Lamivudine, Emtricitabine, Tenofovir)
  - Monotherapy with only HBV agents (Interferon α, Adefovir, Entecavir)

- Patients who need both HBV and HIV therapy
  - Agents with dual activity combining a nucleoside and nucleotide analog (Tenofovir + Lamivudine/Emtricitabine)
Hepatitis B and HIV - Treatment

- Patient who need anti-HIV but no HBV therapy
  - If HBV titer < $10^4$ – can treat HIV alone and closely monitor ALT and HBV DNA
  - If HBV titer > $10^{4-5}$ – treat both to avoid HBV flare due to immune reconstitution

- Patient with cirrhosis
  - Combination HBV-HIV therapy

- Patients with Lamivudine resistant HBV
  - Tenofovir should be added to LAM
Hepatitis C and HIV

- Clinical course of Hepatitis C worsens as HIV immunocompromise advances
  - HCV RNA load increases
  - Transaminase increase
  - Accelerated course to cirrhosis and liver failure
  - Higher rate of active cirrhosis on biopsy
  - May cause lethal fibrosing cholestatic hepatitis

- Increases risk of HCV transmission

- HCV may act as co-factor in HIV disease progression
Hepatitis C and HIV- Treatment

- Favorable effect on liver histology and outcome in HCV-HIV coinfected who receive HAART
- Pegylated interferon + Ribavirin is the treatment of choice in HCV-HIV coinfections
- Control HIV disease with HAART before treating HCV
MAC in the Liver

- Most frequent hepatic pathogen in late-stage HIV disease
- Hallmark – poorly formed granulomas containing acid-fast bacilli in foamy histiocytes
- Marked elevation of alkaline phosphatase
- Diagnosis – liver histopathology, culture of mycobacterium avium complex from liver biopsy tissue,
Mycobacterium tuberculosis in Liver

- Occurs before profound immunocompromise
- May be part of miliary tuberculosis
- Tuberculous abscesses, bile duct tuberculomas
- Diagnosis - culture of mycobacterium tuberculosis from liver biopsy tissue, liver histopathology
- Multidrug therapy
CMV in the Liver

- Uncommon hepatic pathogen
- Can cause a hepatitis
- Diagnosis – typical viral inclusion bodies usually in Kupffer cells, sometimes in hepatocytes or sinusoidal endothelial cells
- Occasionally causes granulomatous disease
Lymphoma in the Liver

- May be the index manifestation of AIDS
- Lesions are focal, sometimes large
- Prognosis depends on extent of immunocompromise
- Improvement in survival in patients receiving HAART
AIDS Cholangiopathy

- Syndrome resembling sclerosing cholangitis with papillary stenosis
- Clinical presentation:
  - Upper abdominal pain
  - Marked alkaline phosphatase elevation
  - Minimal elevation of AST, ALT, bilirubin
  - CT/ultrasonography may or may not show ductal dilation
AIDS Cholangiopathy

ERCP Findings

- Papillary stenosis alone
- Sclerosing cholangitis-like lesions alone
- Combination of the two (most common)
- Long extrahepatic strictures

Etiology – in most cases due to infection of duodenal and biliary epithelium by

- Cryptosporidium
- CMV
- Microsporidium
AIDS Cholangiopathy - ERCP

Arrow = Papillary stenosis

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AIDS Cholangiopathy

Treatment:
- Sphincterotomy for predominant papillary stenosis → symptomatic improvement
- Eradication of infecting pathogen
- HAART
Acalculous Cholecystitis in AIDS

- Severe abdominal pain, occasional peritonitis
- Etiology –
  - Usually CMV infection
  - Sometimes microsporidia, cryptosporidia or isospora
- Treatment – Laparoscopic cholecystectomy