Bacterial & Parasitic Infections in HIV

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Hallmarks of HIV infection
Atypical presentation of diseases seen in non-HIV infected individuals
Medication side effects

Immune reconstitution inflammatory syndrome (IRIS)

Bacillary angiomatosis

Gram negative rods: *Bartonella henselae, Bartonella quintana*

Main DDx is Kaposi sarcoma

Doing a biopsy is ideal

Clinical features can guide you

Staphylococcal Skin Infections

Most common bacterial infection in individuals with HIV

Incidence of MRSA is 6-fold higher in individuals with HIV compared to those without HIV infection

Recurrence is a big issue → what tools do we have?

CDC & IDSA guidelines:
Recurrent MRSA treatment and prevention

• Treatment
  • I&D
  • Antibiotic
    • If severe/extensive disease, rapid progression, systemic illness, comorbidities/immunosuppression, extremes of age, abscess in area difficult to drain, septic phlebitis, lack of response to I&D

• Prevention→ education recommended for all patients with SSTI
  • Cover draining wounds with clean, dry bandage
  • Regular bathing and cleaning of hands
  • Avoid sharing or reusing personal items
  • Environmental cleaning efforts should focus on high-touch surfaces (frequent contact with bare skin)

CDC & IDSA guidelines: Recurrent MRSA treatment and prevention

- Decolonization
  - Consider if, despite optimized wound care and hygiene, patient develops recurrent SSTI OR there is ongoing transmission among close contacts/household members
  - Nasal decolonization with mupirocin ointment twice daily x 5-10 days
  - +/- topical body decolonization with chlorhexidine x 5-14 days or dilute bleach baths
  - For dilute bleach baths, 1 teaspoon per gallon of water (or ¼ cup per ¼ tub or 13 gallons of water) given for 15 min twice weekly for 3 months
  - Couple with ongoing reinforcement of hygiene measures
  - Surveillance cultures after decolonization not routinely recommended in the absence of active infection


Question: Which factor is associated with MRSA infection in HIV?

- A) Zip codes
- B) Illicit drug use
- C) Use of trimethoprim-sulfamethoxazole
- D) All of the above

Bacterial Infections

- Gram positive cocci
  - Staph aureus > Strep pyogenes → Impetigo, folliculitis, furunculosis, cellulitis
- Gram negative rod
  - Bartonella henselae, B. quintana → Bacillary angiomatosis
- Spirochetes
  - Treponema pallidum → Syphilis
- Mycobacteria
  - M. tuberculosis complex → Cutaneous tuberculosis
  - M. leprae → Leprosy
  - Non-tuberculous mycobacteria
    - M. fortuitum, chelonae, abscessus (fast growers)
    - M. marinum, M. abscessus
    - M. avium complex
    - M. kansasii

HIV Dermatology

- Hallmarks of HIV infection
- Atypical presentation of diseases seen in non-HIV infected individuals
  - Immune reconstitution inflammatory syndrome (IRIS)
- Medication side effects
Leishmaniasis

Endemic to 98 countries and territories

Leishmania transmitted via infected female sandflies

Clinical forms
• Visceral
• Tegumentary
  • Localized cutaneous
  • Disseminated
• Oral cutaneous
• Mucocutaneous
• Complex interplay of several factors affect presentations
  • Infecting species, vector, immune and nutritional status of the host, age, genetic background of the host, inoculation site, and parasite load

What resource in the US can help you confirm the diagnosis of leishmaniasis?
• A) Google
• B) You’re on your own
• C) Centers for Disease Control
  • https://www.cdc.gov/parasites/leishmaniasis/resources/pdf/cdc_diagnosis_guide_leishmaniasis.pdf
  • Diagnostic services performed for free:
    • Examination of slides (e.g., of biopsy specimens, impression smears, and dermal scrapings)
    • Provision of leishmanial culture medium
    • In vitro culture and PCR for diagnosis of leishmaniasis and species identification.
    • Serologic testing using the rK39 Rapid Test, for detection of antibodies against organisms in the Leishmania donovani species complex; useful primarily for visceral leishmaniasis

Leishmaniasis / HIV co-infection
• Typical and atypical presentations of visceral, cutaneous, mucocutaneous
• Unusual presentations more common if low CD4 count
• Wide variety: papules, nodules, plaques, diverse ulcerations forms
• Visceral leish & HIV
  • Coinfection impedes therapeutic response and frequent cause of relapse
• Same treatment options as in immunocompetent, but lower cure rates, higher drug toxicity rates, and higher fatality rates

Which of the following environmental changes has been linked to the spread of leishmaniasis?
A) Irrigation schemes
B) Urbanization
C) Building of dams
D) Deforestation
E) All of the above
True/False: Scabies is only associated with skin disease
• A) True
• B) False

True/False: Scabies is only associated with skin disease
• A) True
• B) False


Question: Mass drug administration of ivermectin reduces which of the following?
• A) Scabies
• B) Impetigo
• C) Onchocerciasis
• D) All of the above

Randomly assigned 3 island communities to:
• Standard care: permethrin to affected persons and their contacts
• Mass administration of permethrin
• Mass administration of ivermectin

Results
• Prevalence of scabies declined significantly in all groups
• Prevalence of impetigo declined significantly in all groups
Parasitic Infestations & Infections

- Ectoparasites
  - Sarcopes scabieii → Scabies
  - Pediculus humanus → Lice
- Protozoa
  - Acanthamoeba
  - Balamuthia mandrillaris
  - Leishmania spp. → Leishmaniasis
- Helminths
  - Strongyloides stercoralis → Strongyloides
  - Wuchereria bancrofti, Brugia malayi, B. timori → Lymphatic filariasis
  - Onchocerca volvulus → Onchocerciasis
  - Soil-transmitted helminths
    - Ascaris lumbricoides, Trichuris trichiura, Necator americanus, Ancylostoma duodenale

Question: Are helminth infections associated with HIV?
- A) Yes
- B) No
- C) Possibly

Lymphatic filariasis: risk factor for HIV infection?

Antihelminths may suppress viral load?

- Deworming drugs in all HIV-positive adults (regardless of helminth infxn status)
  - May have a small suppressive effect on viral load at 6 weeks (low quality evidence)
  - Repeated dosing over two years appears to have little or no effect on either viral load (moderate quality evidence) or CD4+ cell count (low quality evidence)
- Deworming drugs in HIV-positive adults with diagnosed helminth infection
  - May have a small suppressive effect on mean viral load at 6 to 12 weeks (low quality evidence) and a small favourable effect on mean CD4+ cell count at 12 weeks (low quality evidence).
- Limitations: small studies and strongly influenced by a single study of praziquantel for schistosomiasis.
- Verdict: There is no suggestion that deworming drugs are harmful for HIV-positive individuals. Further studies from different settings and populations are needed.