

Infectious Disease in Oncology

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Objectives

- Discuss the significance of infection in the oncology population
- Discuss the bacterial, viral, fungal and other infectious organisms commonly found in oncology patients
- Discuss the treatment and challenges associated with infections
- Discuss drug-resistance organisms

Infectious disease

- Impact of chemotherapy and disease on the immune system
- Protective mechanisms
 - Skin
 - Natural flora
 - Immune system
 - Good Hygiene



- Possible routes for invasion into the body
 - GI tract
 - Skin lesions/wounds
 - IV access
 - GU tract
 - Surgical incisions
 - Respiratory system

- Identification of organism
 - Cultures
 - Blood, tissue, urine, sputum, wound, stool
 - Blood cultures should be drawn both peripherally and from IV access (central lines)

Organisms

- Bacteria
- Virus
- Fungus

Staphylococcus aureus

- Usually skin infection
- Cultured from wounds, sputum, blood
- Treatment:
 - Vancomycin 1 gram IV q 12 hours, adjust for renal
 - Multiple choices for PO medications

Staphylococcus epidermis

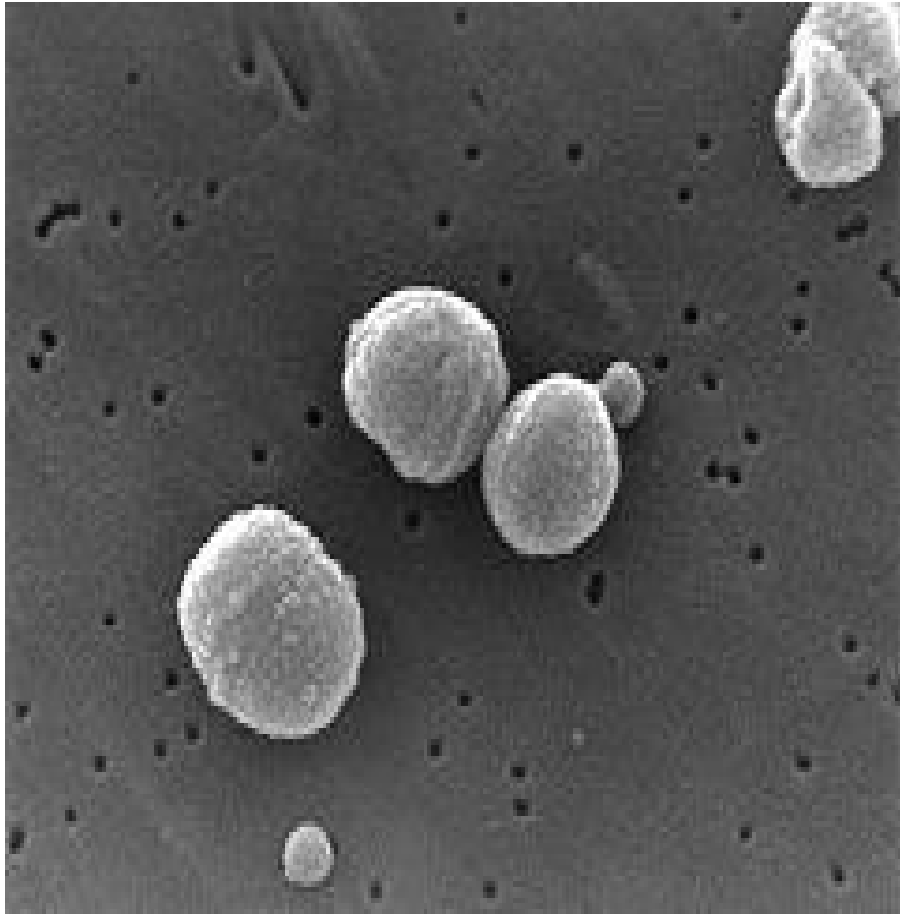
- Usually from the skin
- Treatment :
 - Vancomycin 1 gram IV q 12 hours, adjust for renal
 - Cefepime 1 gram IV q 8 hours
 - Levaquin 500 mg po daily
 - Amoxicillin-clavulanate 875 mg po BID

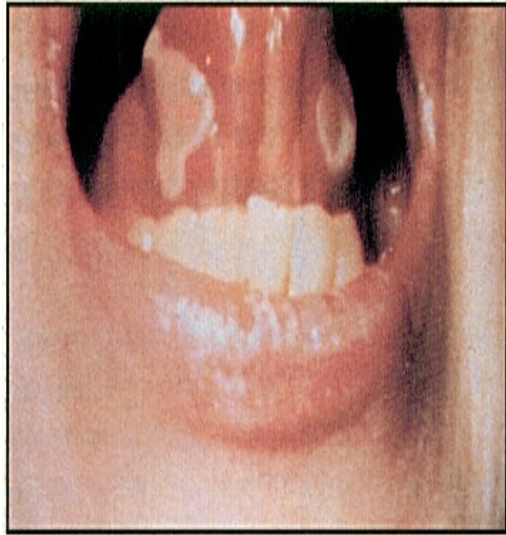
Streptococcus Pneumoniae

Infection from skin, sputum as bacteria attaches to sinus causing pneumonia

Most common cause of bacterial meningitis

- Penicillin G 8 – 12 million units/day IV divided q 4 – 6 hours
- Levaquin 500 mg po daily x 7 days
- Cefipime 1 gram IV q 8 hours x 7 days





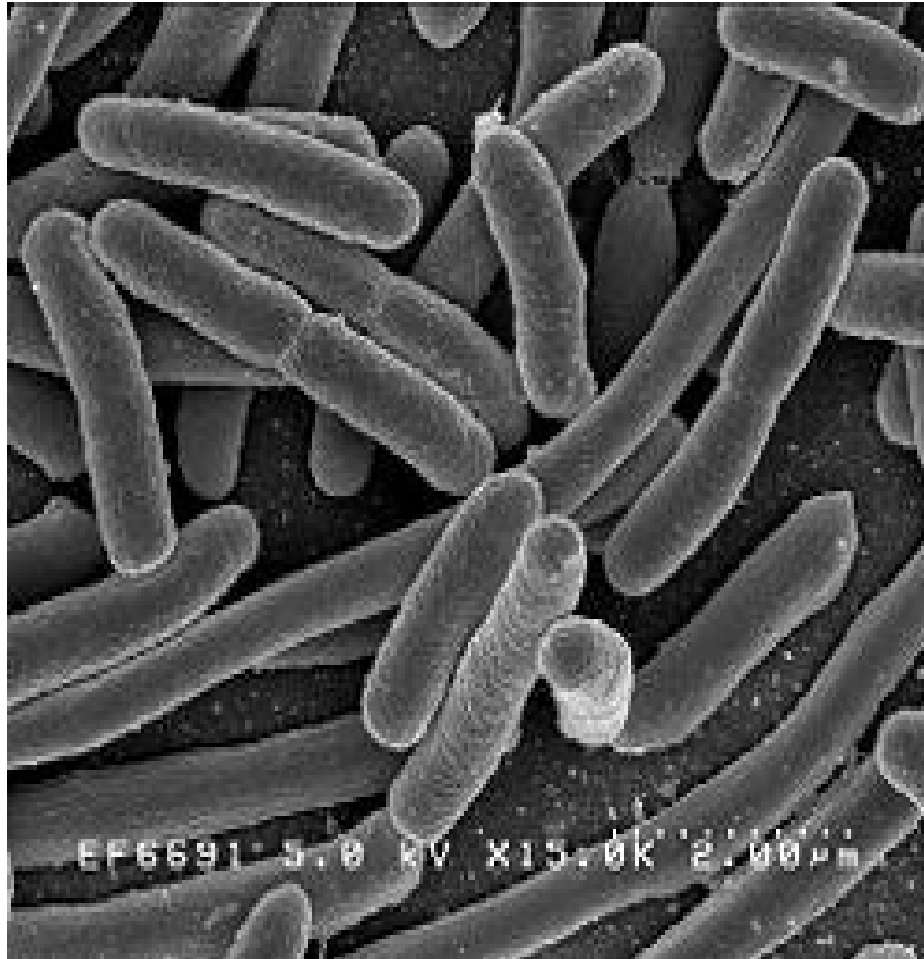
Gram-Negative infection



Gram-Positive infection

Gram Negative Organism

- Escherichia coli – stool common source
 - Contamination from not washing hands
 - Most common cause of urinary tract infections in hospital settings
- Can treat with po medications such as Levaquin 500 mg po daily



Anaerobe

- Clostridium difficile
- Major cause of diarrhea, colitis
- Used to be primarily in the hospital setting, now in the community
- Currently isolating patients for C. diff. until stool specimen comes back negative, change patient to another room and high clean patient's old room
- Treatment
 - Flagyl 500 mg po BID for at least 10 days
 - Vancomycin 1 gram IV q 12 hours





Fungal Infections

- *Candida albicans* – usually oral
 - Diflucan 200 mg PO loading then 100 mg po daily uncomplicated oral candidiasis, can give up to 400 mg PO daily
- Asperilliosis – lungs
 - IV treatment with Amphotericin or Ambisome

Herpes Virus

- Herpes Simplex 1 – oral lesions, can have oral genital transmission
- Herpes Simplex 2 – genital herpes
- Human Herpes Virus 3 – Varicella Zoster, commonly called ‘chicken pox’
- Human Herpes Virus 4 – Epstein Barr Virus, ‘infectious mononucleosis’
- Human Herpes Virus 5 – Cytomegalovirus, can also cause mononucleosis
- Human Herpes Virus 6 – Roseola
- Human Herpes Virus 7 – similar to 6, can also cause Roseola
- Human Herpes Virus 8 – found in Kaposi’s Sarcoma, may also be a cause of lymphoma in patients with AIDS

Herpes

- Treat with
 - Acyclovir 800 mg po twice daily
 - Valtrex 1000mg po twice daily
 - Famvir 500 mg po three times daily for zoster
 - Treatment in neutropenic patients essential to prevent dissemination of

Cytomegalovirus

- Can present with pharyngitis, pneumonia, retinitis, encephalitis, peripheral neuropathies
- Chest x-ray: interstitial infiltrates predominately in lower lobes
- Diagnosis:
 - Biopsy with culture – can be very slow
 - Lab – elevated IgM four fold increase

Treatment

- Acyclovir 800 mg po TID x 7 days, longer if neutropenic
- Valtrex 1000 mg po BID x 7 days
- Ganciclovir IV or PO, expensive



Resistant Organisms

- Research and development problems
- Societal views on illness and therapy
 - Want a ‘pill to fix them’
 - Non-compliance with treatment regimen
 - Over use, inappropriate use
- Over-treatment, inappropriate prescribing of antibiotics for viral infections

Resistant – Gram Positive

- Methicillin-resistant Staphylococcus aureus (MRSA)
- Vancomycin resistant enterococci (VRE)
- Vancomycin resistant staphylococcus aureus (VRSA)
- Vancomycin intermediate/resistant Staphylococcus aureus (VISA)
- Penicillin (ceftriaxone) resistant Streptococcus pneumoniae

Resistant – Gram Negative

- *Pseudomonas aeruginosa*
- *Citrobacter*
- ESBL – extended spectrum beta-lactamases
 - *Escherichia coli*
 - *Klebsiella*



Prevention

- Handwashing!!!!
- Clean water sources
- Personal hygiene
- IV access – change every 72 hours

- Emphasis in the community as well as the hospital setting for a clean environment
- Encourage good handwashing
- Encourage responsible use of antibiotics

Thank you!