Atypical Infections: Can We Be More Specific?

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Disclosures

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Talk can be found:

Radiologytalks.com
What bug is it?!
Objectives

• Describe common patterns atypical infxn
  • Nodules: micro- and macro-
  • Ground glass opacities
  • Consolidation
• Discriminators / signs to narrow DDx
Radiology and Pneumonia

- Clinical scenario is key predisposes to pathogens
  - aspiration risk
  - travel
  - nosocomial
    - intubated
    - central line
  - immunosuppression (pathogens in immunosuppression = *)
Case 1: Previously healthy, cough, fever, wheeze x 2 weeks

What bug is it?
Micronodules: Centrilobular Airway dissemination, +/- tree in bud bronchiolitis
Micronodules: Centrilobular

Airway dissemination, +/- tree in bud

viral (RSV, parainfluenza, HSV*); bact: Mycoplasma, mycobacteria; fungal: airway invasive Aspergillus*
Micronodules: Centrilobular

Discriminator: air trapping
hyperlucency, mosaic perfusion

Viral: RSV, Adenovirus

Bacteria: Mycoplasma, mycobacterial (TB, NTB)

*Mycobacterium avium intracellulare*
Case 1: Previously healthy, cough, fever, wheeze x 2 weeks

What bug is it?

Centilobular nodules, mosaic perfusion, air trapping
Case 1: Previously healthy, cough, fever, wheeze x 2 weeks

What bug is it?

Centilobular nodules, mosaic perfusion, air trapping
Case 1: Previously healthy, cough, fever, wheeze x 2 weeks

What bug is it?

Centilobular nodules, air trapping

Respiratory Syncytial Virus
Case 2: AML, fever
What bug is it?
Macronodules, Masses

airborne and hematogenous

Endemic fungi, Aspergillus*, Mucor*, Candida*;
bacteria: septic emboli (Staph, Enterobacter, Fusobacteria), Mycobacteria, Nocardia*;
virus: VZV

* Fusobacterium necrophorum
Macronodule: Discriminators

Cavitation: necrotizing

Bacteria: septic emboli, Mycobacteria, Nocardia*; fungi: endemic (rare: blastomycosis), Aspergillus*, Mucormycosis*

Fusobacterium  Staph  Nocardia
Macronodule: Discriminators

GGO “Halo” sign: hemorrhage

Fungus: invasive Aspergillus*, Candida*, Mucormycosis*, Cryptococcus*; viral: VZV, HSV*
Macronodule: Discriminators

Central GGO: “Reverse Halo”
fungi: Mucormycosis*, invasive Aspergillosis*;
bacteria: Legionella, S pneumoniae, TB

Tuberculosis

Mucormycosis
Case 2: AML, fever
What bug is it?
Case 2: AML, fever, reverse halo in patient with AML, Mucormycosis*, invasive Aspergillus*
Case 2: AML, fever
reverse halo in patient with AML
Mucormycosis*, invasive Aspergillus*
Case 3: BMT, dyspnea, fever
What Bug Is It?
Ground Glass Opacities

Partial alveolar filling
organisms, neutrophils, +/- hemorrhage, +/- hyaline membrane
Ground Glass Opacities

Partial alveolar filling

nonspecific: early bacterial; PJP*; viral (RSV, Adenovirus, CMV*, HSV*)
Ground Glass Opacities

Discriminator: peribronchial airborne: early bronchopneumonia (S aureus, H.influenza, P. aeruginosa), Mycoplasma; PJP*

S aureus  
Mycoplasma  
Pneumocystis
Ground Glass Opacities

Discriminator: crazy paving edema interlobular septa from infection

Mycoplasma; PJP*, viral: Adeno, Influenza

Adenovirus  
Mycoplasma  
Pneumocystis
Ground Glass Opacities

Discriminator: crazy paving

Case 3: BMT, dyspnea, fever
multifocal GGO, crazy paving
Ground Glass Opacities

Discriminator: crazy paving

Case 3: BMT, dyspnea, fever
multifocal GGO, crazy paving

*Pneumocystis jiroveci*
Case 4: AIDS, fever
What Bug Is It?
Localized Consolidation
complete filling alveoli; progression GGO
most bacteria; fungi: blasto, histo, PJP*

Pneumocystis jiroveci  S aureus
Consolidation: Discriminators

Lobar:  *S pneumonias*, *Legionella pneumophila*, *Klebsiella pneumonias*, *H influenzae*, *Chlamydia pneumonias*, primary TB; fungal: Blastomycosis
Consolidation: Discriminators

Tree-in-bud, centrilobular nodules

Virus: adenovirus, influenza;
Bacteria: Mycoplasma, mycobacteria
Consolidation: Discriminators

Tree-in-bud, centrilobular nodules

Virus: adenovirus, influenza;
Bacteria: Mycoplasma, mycobacteria

mycoplasma  adenovirus  tuberculosis
Consolidation: Discriminators

Cavitation: necrotizing infection
Staph, gm -, anaerobe, mycobacteria, Legionella*; histo

Tuberculosis  Fusobacterium  Staphylococcus
Case 4: AIDS, fever

Lobar cavitary consolidation
Case 4: AIDS, fever

Lobar cavitary consolidation

*Legionella pneumoniar*
Conclusions

• Common patterns atypical infxn

• Discriminators to help narrow DDx

• DDx changes with clinical scenario

• Consider ID rounds!
Not Every ID Patient has Infection

Hx: atrial fibrillation, breast ca, neutropenic fever, dyspnea

Peripheral multifocal consolidation

Drug Toxicity: Eosinophilic Pneumonia
References


Oh YW, Effmann EL, Godwin JD. Pulmonary Infections in Immunocompromised Hosts: The Importance of Correlating the Conventional Radiologic Appearance with the Clinical Setting. Radiology 2000; 217:647–656
Thank you!

Copy of the talk: Radiologytalks.com

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