Atypical Mycobacterial Lung Disease

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Objectives

- Identify the major pulmonary pathogens
- Identify common clinical presentations of atypical mycobacterial disease
- Describe the primary imaging findings

Atypical Mycobacteria

- MAC - most common pulmonary pathogen
- M. fortuitum
- M. chelonei
- M. kansasii
- M. abcessus

Pulmonary Presentations

- Classic infection
- Non-classic infection
- Immunocompromised
- Hot tub lung
- Achalasia
- Lipoid pneumonia

Classic Infection

- Older men
- COPD
- Mimics postprimary TB on CxR

Disclosures

- None
**Classic Infection**

- MAC
- Christensen, et al.
- 92% apical and/or posterior segments
- 88% cavities

**Classic Infection**

- M. kansasii
- Christensen, et al
- 187 pts
- Upper lobe involvement 98%
Pulmonary Presentations
- Classic infection
- Non-classic infection
- Immunocompromised
- Hot tub lung
- Achalasia
- Lipoid pneumonia

Non-classic Infection CxR
- Different radiographic pattern
- Multiple nodules/nodularity
- Diffuse with slight lower lung predominance
- Small cavities resembling bronchiectasis

Albeida, et al, Radiology 157; 1985
Non-classic Infection CT

- Multiple nodules/nodularity
- Bronchiectasis
- Slight middle lobe and lingular predominance
- Older women

Moore, Radiology 187, 1993

Non-classic Infection CT

- CT findings predictive of atypical mycobacterial disease
- 100 consecutive pts with bronchiectasis – 24 had nodules/nodularity
- CT prediction of positive MAC cultures sensitivity 80%, specificity 87%

Pulmonary Presentations

- Classic infection
- Non-classic infection
- Immunocompromised
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AIDS Associated Mycobacterial Infections

- TB and MAC most common
- CD4 count influences imaging findings

AIDS MAC

Imaging
- CD4 >200 post primary TB pattern
- CD4 <200 primary or miliary patterns

AIDS MAC

Imaging CD4 < 200
- Diffuse bilateral reticulonodular pattern
- Adenopathy more common
- Cavitation and pleural effusions less common than HIV negative

AIDS MAC

• Can present with isolated adenopathy on CxR
• Most common cause*

Hamarati, Clin Rad 1996
**AIDS MAC**

CT
- Low attenuation adenopathy
- Rim-enhancement with contrast

**Reversal Syndrome**
- Described by Nalaboff AJR 2000; 175:387
- Occurs in AIDS patients receiving highly active antiretroviral therapy
- Improved immunologic status with decreasing viral loads and increasing CD4 counts

**Reversal Syndrome**
- MAC infection
- Reaction by recovering immune system
- New or enlarging adenopathy
Pulmonary Presentations

- Classic infection
- Non-classic infection
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Hot Tub Lung

- 5 pts. - 4 from one hot tub
- Hypersensitivity pneumonitis type presentation
- MAC contaminated water aerosolized and inhaled

Biopsy shows nonnecrotizing granulomatous pneumonitis
- All (10) culture positive for NTMB
- Steroids, Antimycobacterial therapy and both all showed improvement

Hot Tub Lung CxR

- Fine diffuse reticulonodular or miliary pattern
- May be normal

Hot Tub Lung CT

- Patchy areas of ground glass attenuation
- Centrilobular nodules of ground glass attenuation
- Airtrapping may be present on expiratory images

Hartman et al, AJR 2007
Pulmonary Presentations

- Classic infection
- Non-classic infection
- Immunocompromised
- Hot tub lung
- Achalasia
- Lipoid pneumonia

Achalasia

- Pts predisposed to infection
- M. fortuitum - chelonei
- Bilateral confluent opacities
- Resembles aspiration

Gibson J Pathol Bacterial 65:1953

Lipoid Pneumonia

- Typically M. chelonei or fortuitum
- Fat attenuation areas of consolidation and/or areas of “crazy paving”
- Nodules +/- cavitation
- Pleural effusions may be present
Conclusion

- Atypical mycobacteria can cause a variety of thoracic pathology

Conclusion

- Expected radiologic presentation can be influenced by age, gender, immune status, and underlying thoracic diseases