

Diagnostic Tools Available in 2019

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▪ Objectives

- How to apply different diagnostic tools for coccidioidomycosis to your patient.

Outline

- Different diagnostic tools and methods
 - Serology
 - Cultures
 - PCR
 - Biopsy and cytology

- 50 y/o M history of D.M present with cough and severe fatigue for the last 2 weeks



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- Screening for valley fever for community acquired pneumonia in endemic area
 - It is recommended and should be routine
 - One study showed 24% of CAP is from coccidioidomycosis¹
 - It is extremely under utilized
 - In one study the rates was about 2% and 13%²

1. Valdivia L, Nix D, Wright M, et al. Coccidioidomycosis as a common cause of community-acquired pneumonia. *Emerg Infect Dis* 2006; 12:958–62
2. Chang DC, Anderson S, Wannemuehler K, Engelthaler DM, Erhart L, Sunenshine RH, Burwell LA, Park BJ SO *Emerg Infect Dis*. 2008;14(7):1053.

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- When to suspect infection
 - CAP in endemic area or traveled to endemic areas recently plus
 - diffuse, symmetrical arthralgias or rash (erythema nodosum or erythema multiforme)
 - Atypical infiltrate in chest imaging (nodular disease, lung mass)
 - Cavitory disease
 - Un-resolving symptoms despite antibiotic therapy
 - Night sweats, marked fatigue
 - High risk patients (chronic immunosuppression and pregnancy)

- Serology (initial screening)
 - Enzyme immunoassays (EIAs)
 - anticoccidioidal immunoglobulin M (IgM) and immunoglobulin G (IgG)
 - Immunodiffusion based tests for traditional tube precipitin (IDTP) or complement-fixing (IDCF) anticoccidioidal antibodies

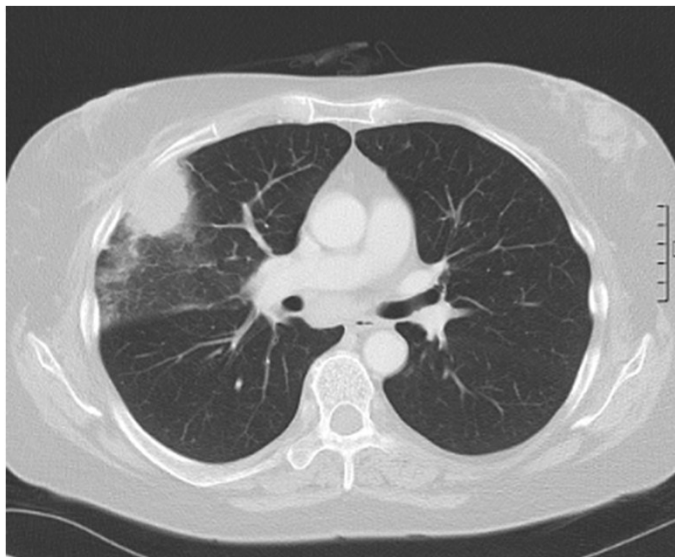
- Cultures

- It is usually obtained via sputum or through bronchoscopy
 - Bronchoalveolar lavage
 - Takes long time

- Polymerase chain reaction (Cocci PCR)

- coccidioidal DNA and detection of coccidioidal antigen in body fluid
 - Usually obtained via bronchoscopy
 - Sputum samples can also used

- 63 y/o F, has 25 pack year smoker quit several years ago has progressive cough streaky hemoptysis, 14lbs weight loss and ant chest wall pain which has worsened over the past 4 weeks



- High risk patients for lung cancer
 - Starts with serology
 - Bronchoscopy but usually get biopsy

- Lung biopsy; key points
 - Necrotizing granuloma and cocci spherules
 - Biopsy cultures
 - Biopsy PCR
- Bronchial lavage cytology
 - Sometimes spherules can be seen (usually in severe disease)

▪ **Explify Respiratory Pathogens by Next Generation Sequencing**

- This test detects potential respiratory pathogens by unbiased next-generation cDNA and DNA sequencing.
- It is currently being tested for coccidioidomycosis

Summary

- Use serology in CAP patients in endemic area
- Active investigational approach to confirm diagnosis in high risk cases
 - high risk individuals such as immunocompromized, D.M, pregnancy
 - Severe pulmonary disease (multilobar, severe nodular disease)
 - Cavitory disease or hemoptysis
 - Bronchoscopy for cocci PCR and cytology

**ARE YOU DIAGNOSING A PATIENT WITH
COMMUNITY ACQUIRED PNEUMONIA?
CONSIDER REFERING PATIENT TO**



SANDS PPC OBSERVATIONAL STUDY

Conducted by: PULMONARY DIVISION UCSF FRESNO, UNDER DR.
MOHAMED FAYED, M.D.

CRITERIA:

- **Aged ≥ 18 years**
- **Diagnosis of Community Acquired Pneumonia (CAP)**

Patients enrolled will be tested for coccidioidomycosis and if positive, will be enrolled into step two of observational study and treated per standard of care.

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- Thank you!
- Questions

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