Coccidioidomycosis

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Disclosure

• Nothing to disclose

Learning Objectives

• Understand the changing epidemiology of coccidioidomycosis
• Recognize the varied pulmonary presentations of cocci
• Be familiar with common presentations of disseminated coccidioidomycosis
• Be familiar with treatment and clinical monitoring for coccidioidomycosis

Coccidioidomycosis “Cocci”

• Coccidioides immitis and Coccidioides posadasii
  – Dimorphic fungus

  mycelia
  endospores
  arthroconidia
  spherule
The Ecology of Cocci

Changing Epidemiology of Cocci

Transmission of Cocci
Pulmonary Cocci

Primary Pulmonary Cocci

- 60% of infections are asymptomatic or mild respiratory illness
  - 25% of community-acquired pneumonia in endemic areas
- Segmental or lobar consolidation, +/- regional adenopathy
- Eosinophilic pleural effusion

Clinical Manifestations

- Cough, fever, dyspnea, scant sputum production
- Onset 1-3 weeks after exposure to arthroconidia
- Possible erythema nodosum – good prognosis
- Pleural effusion only approximately 10%
**Diffuse Cocci Pneumonia**
- High inoculum
- Immunosuppression
- Pregnancy
- Treatment may be prolonged

**Other Forms of Pulmonary Cocci**

- **Solitary Pulmonary Nodule**
  - No treatment required

- **Chronic Progressive Cavitary**
  - Treatment indicated - prolonged

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**Disseminated Coccidioidomycosis**

- Filipino or African ethnicity
- Immunosuppression
  - Prednisone
  - TNF-α inhibitors
  - Chemotherapy
  - Organ transplantation

**Disseminated Coccidioidomycosis Risk Factors**
- HIV/AIDS
- Diabetes mellitus
- Pregnancy
- Cardiopulmonary disease
- CF titer ≥ 1:16

**Diagnosis of Disseminated Cocci**

- Serology supportive if CF titer > 1:16
- Definitive diagnosis
  - Any positive CF titer from CSF
  - Culture
  - Histopathology (spherules in tissue)

**Cutaneous Cocci**

- Most common form of dissemination
- Non-healing, wart-like ulceration
- Diagnosis confirmed by skin biopsy
  - Histopathology with spherules
  - Culture often positive

**Soft Tissue Cocci**

- Fluctuant, usually painless fluid collections
- Favor bony prominences such as hips, spinal column, sternum and ribs
- Diagnosis confirmed by aspiration for direct smear and culture

**Bone and Joint Cocci**

- Painful joint or long bone
- Similar to other causes of septic arthritis
- Diagnosis by arthrocentesis, synovial biopsy, or bone x-ray in setting of active cocci
Treatment of Non-Meningeal Disseminated Cocci

- Triazoles are the mainstay of therapy
  - Fluconazole 400-800 mg daily
  - Itraconazole 200 mg BID preferred for bone and joint disease
- Monitor serum CF titer; once low or undetectable can consider lowering dose
- Most clinicians consider disseminated cocci to require life-long therapy at lowest possible dose
- Can monitor serum CF titer as marker of disease activity


Cocci Meningitis

- LP indicated for persons with symptoms suggestive of meningitis
  - Blurred vision, headache, photophobia, meningismus, altered mental status, focal neurologic finding (CN III-VIII)
- CSF mononuclear cell pleocytosis, elevated protein and low glucose
- Diagnosis confirmed by CF titer or culture (rare)
- Imaging studies supportive; can mimic tuberculous meningitis

Treatment of Cocci Meningitis

- Fluconazole 800-1200 mg daily
- Liposomal amphotericin B 5-10 mg/kg/day
  - Intrathecal deoxycholate amphotericin B
- Voriconazole
- Posaconazole
- Isavuconazole
- Lifelong treatment is recommended

Complications of Cocci Meningitis

- Hydrocephalus
  - VP shunt
- CNS vasculitis
- Cerebral ischemia/infarction
- Vasospasm
- Hemorrhage

Monitoring Response to Cocci Therapy

- Clinical signs and symptoms
- Serial serum and/or CSF cocci CF titer
  - Four-fold change required to be significant