Rapid Dissemination of Blastomycosis in Late Pregnancy

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Patient Presentation

- **HPI:** 38 y/o F from Wausau at 35 weeks pregnancy with no past medical history presents to local ED w/ 2 weeks R knee pain, L thigh cutaneous lesion, **new-onset dyspnea.**

- **PCP Visit 2 Weeks Prior:**
  - Knee pain and cutaneous lesion noted.
  - Denies trauma, acute injury, popping/locking sensation.
  - Cutaneous lesion is painful and expressed foul-smelling fluid when patient probed with a pen.
  - Dx: patellofemoral syndrome, cellulitis
  - Tx: Cephalexin

- **OB Visit 1 Week Prior:**
  - Unable to bear weight on right leg due to pain
  - Issue is not further pursued
Events at Local Hospital

- **Labs:** CMP and CBC within normal limits, ESR and CRP markedly elevated

- **Imaging:**
  - CT Chest: negative for PE, **+bilateral lung infiltrates**
  - MRI R knee with large effusion, changes consistent with **tibial osteomyelitis**

- **Course:**
  - C-section without maternal or fetal complication
  - I&D: pretibial abscess, purulent knee joint, thigh abscess
  - Post-Operative:
    - Antibiotics: Vancomycin/Linezolid + Ceftriaxone
    - Hypoxic Respiratory Failure → Intubated
    - Anuric Renal Failure → CRRT
    - Severe ARDS → transferred to UWHC
  - Bacterial cultures negative (blood, abscesses, bone), but no fungal cultures performed
Presentation to UWHC

- Physical Examination:
  - Vitals: T 36.5 oral, **HR 108, BP 80/43** (on 0.2 mcg/kg/min NE), RR 34, **O2-sat 51%**, FiO2 100%, PEEP 12
  - General: intubated, sedated
  - Cardiovascular: normal s1s2, rrr, no mrg, warm extremities
  - Pulmonary: **diffuse rhonchi bilaterally**, no wheezes
  - Abdominal: nondistended, hypoactive bowel sounds, **well-healing low-transverse C-section scar**
  - Skin: **acrocyanosis, R knee clean** and well-healing w/ sutures at multiple previous drain sites, L thigh w/ small incision at prior drain site w/o purulence or erythema
  - Neuro: **paralyzed**, no response to pain
Presentation to UWHC

- Labs:
  - 133 98 31 137
  - 4.4 23 1.48 37.8 9.8 338
  - ESR 134 CRP 28

- Imaging:
  - CXR: confluent disease alveolar filling pattern w/ **air bronchograms**, **ARDS pattern** related to breakdown of capillary-alveolar membrane

- Procedures:
  - Bronchoscopy
    - Frank pus in bronchioles
    - **Fungal Smear and Culture:** *Blastomyces dermatitidis*

- Review of Bone Biopsy: osseous blastomycosis

- Plan:
  - Liposomal Amphotericin B
  - **Severe ARDS:** low TV, prone positioning, paralyzed, Epoprostenol
Blastomycosis

- Pathogenesis and Organ Involvement
  - Pulmonary – inhalation of fungal spores
  - Cutaneous Inoculation
  - Disseminated - acquired via dissemination from pulmonary tract upon developing immunocompromised state

- Epidemiology
  - Children, pregnant women, and immunocompromised transplant recipients, TNF-α inhibitors

- Treatment³ – depends on organ involvement
  - Pulmonary or Disseminated
    - Mild-Moderate Disease: Itraconazole 200 mg TID x3 days
    - Moderate-Severe Disease: liposomal Amphotericin B 3-5 mg/kg/day x1-2 weeks, then PO Itraconazole 200 mg TID x3 days, then PO Itraconazole 200 mg BID x6-12 mos (12 if osseous)
  - Use Amphotericin B in pregnant women (azoles teratogenic)
  - Evaluation for fetal transmission in pregnant women
Disseminated Blastomycosis in Pregnancy

- University of Mississippi: review of both hospital records and medical literature for cases of pregnancy-associated blastomycosis as of 2002
  - 19 total cases identified, all as case reports (16) or UMMC hospital records (3)
  - Stage of pregnancy at time of diagnosis: 6-36 weeks with an average of 26.7 weeks
- Organ Involvement:
  - Not identified: 1 case
  - Pulmonary (isolated or disseminated): 14/18 (78%)
  - Disseminated: 11/18 (68%)
Osseous Blastomycosis

5Rush University: Retrospective review of all cases of blastomycosis osteomyelitis and arthritis during 2000-2010:
   • Lower Extremity: 9/14 cases (64%)

6University of Manitoba: Retrospective review of all cases of osseous blastomycosis
   • 41 osteomyelitis: 24 (59%) lower extremity
   • 12 arthritis: 8 (67%) lower extremity
   • Cutaneous disease in 73%, Pulmonary disease in 64%
Occam’s Razor or Hickam’s Dictum?

Consider Disseminated Blastomycosis

- Cutaneous Lesion
- Osteomyelitis
- Respiratory Symptoms
- Immunocompromised
Take-Home Pearls

- Include Blastomycosis in differential for native-joint infectious arthritis when in endemic region, especially if lower extremity involvement.
- Pregnancy predisposes women to disseminated Blastomycosis, albeit a rare entity in this population.
- Evaluate for fetal transmission of blastomycosis when disseminated disease is present in pregnant women.
Thank you...

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References


