

Deer Hunting: A Blast-O To The Lungs

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Case Presentation

- A 39-year-old man with no significant past medical history presented with progressively worsening non-productive cough and fatigue over the past month.
- He was first evaluated at urgent care but failed to clinically improve despite courses of azithromycin, amoxicillin-clavulanate and levofloxacin.
- He was admitted to an outside hospital for worsening symptoms. CT chest was concerning for multifocal necrotizing pneumonia (figure 1). He was treated with empiric vancomycin and meropenem without improvement prior to transfer to our facility.
- Upon interview, patient reported the following:
 - No tobacco, alcohol, or recreational drug use.
 - Works in the trucking industry in Odessa, TX, with frequent travel to the South-western and Midwestern United States.
 - He has a dog, a donkey and several goats at his home in rural Louisiana.
 - No obvious risk factors for tuberculosis.
 - He hunted deer in Wisconsin two months prior. His travel companions developed similar but milder respiratory symptoms.
- He ultimately underwent bronchoscopy:
 - Broad based budding yeasts were noted on both Gram stain and CalciFluor white stain of both sputum and bronchial wash cultures (figure 2).
 - Fungal cultures ultimately grew *Blastomyces* species.
- He rapidly improved on a two-week liposomal amphotericin induction course and was subsequently transitioned to oral itraconazole upon discharge.

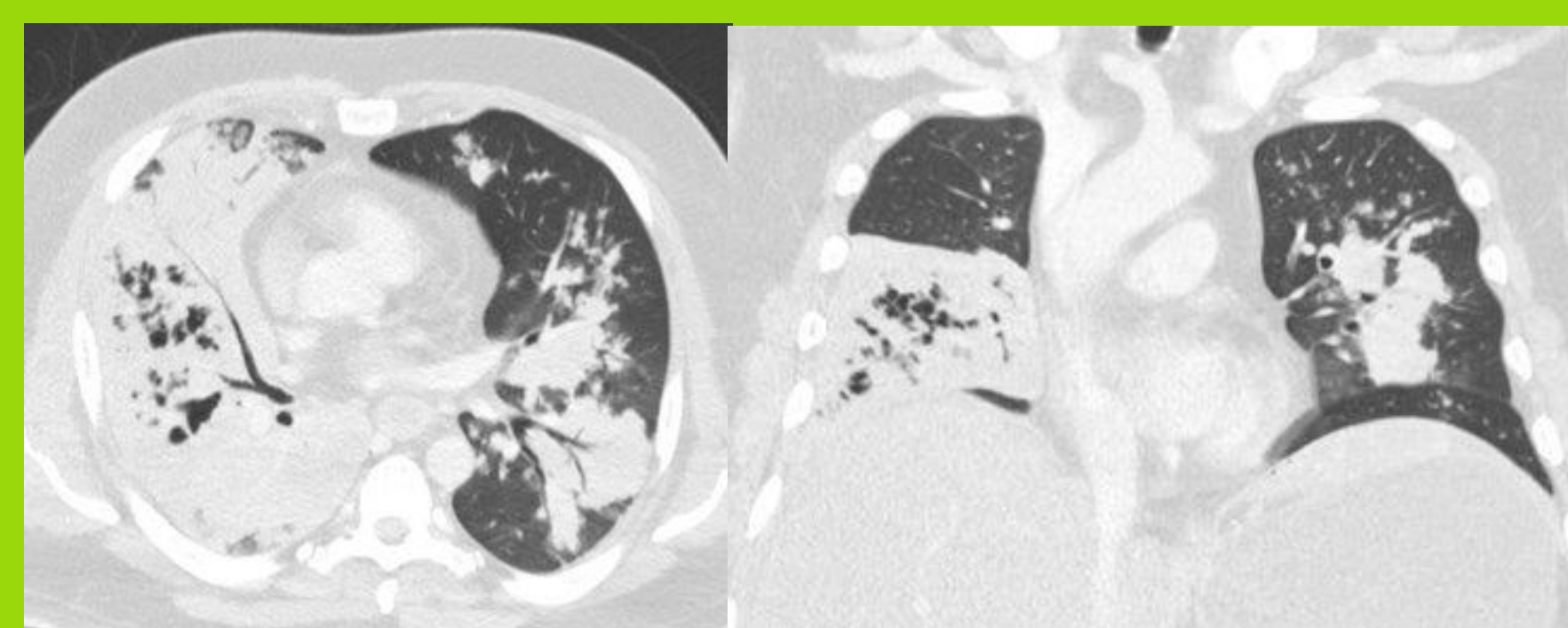


Figure 1. Multifocal consolidation in chest CT.

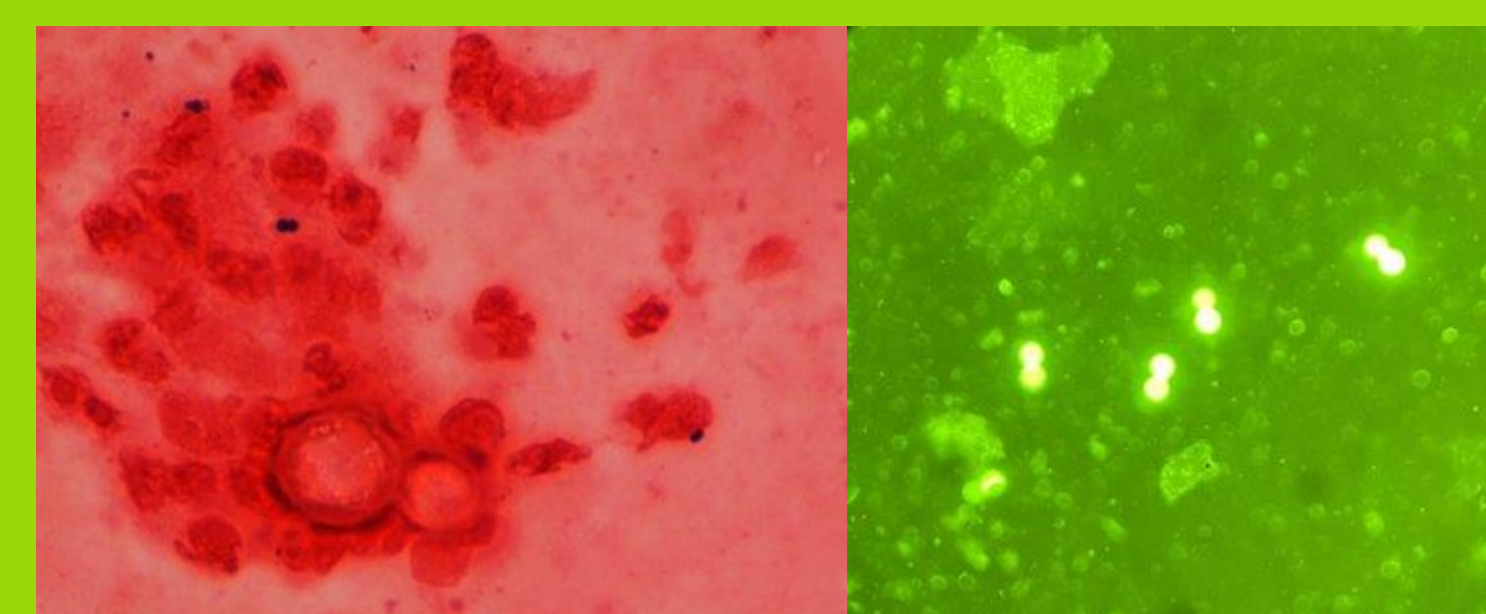


Figure 2. Broad based budding yeasts seen in Gram stain and CalciFluor white stain, suggestive of *Blastomyces* species.

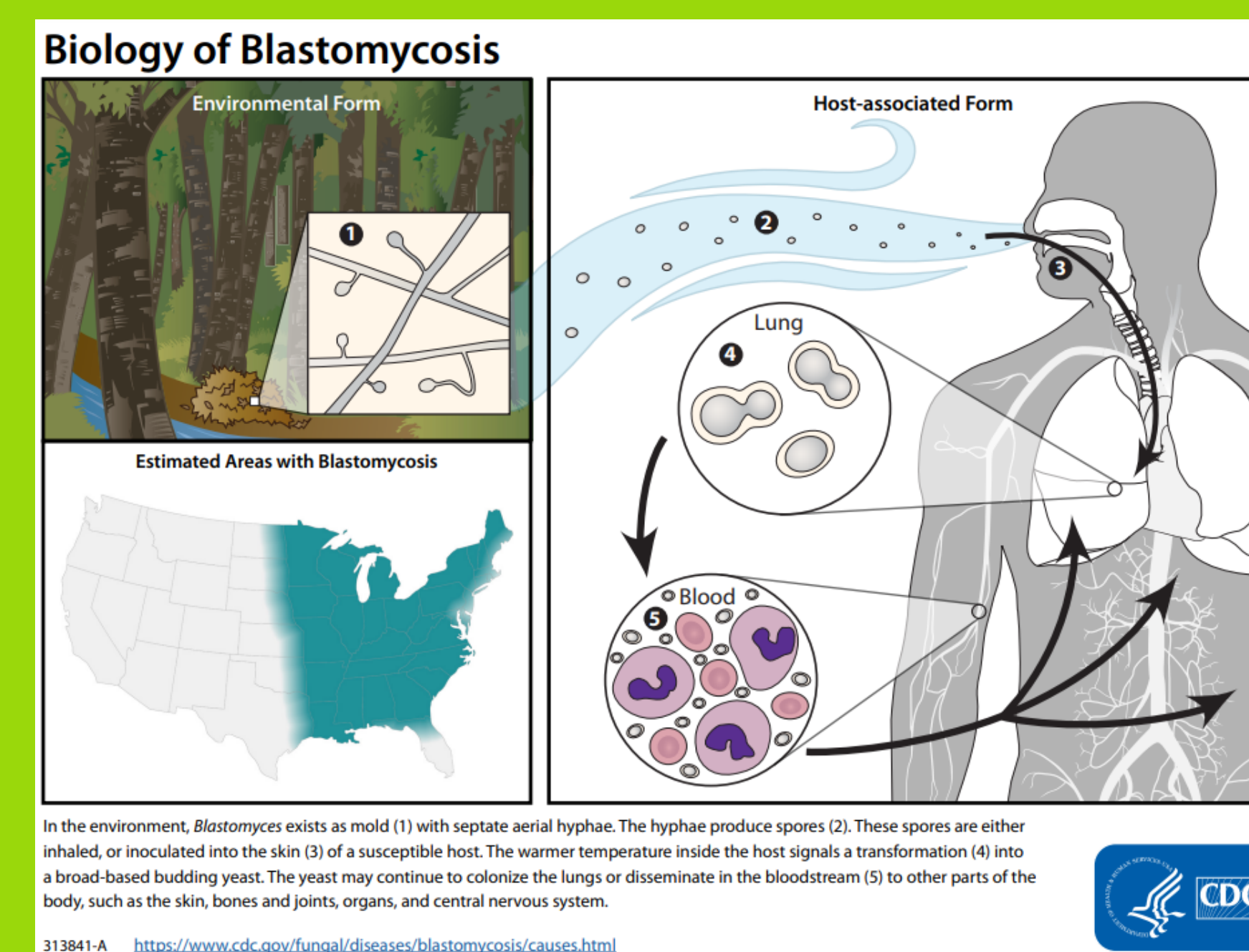


Figure 3. Biology of Blastomycosis (from CDC website).

Reference

- Chapman SW, Dismukes WE, Proia LA, Bradsher RW, Pappas PG, Threlkeld MG, Kauffman CA; Infectious Diseases Society of America. Clinical practice guidelines for the management of blastomycosis: 2008 update by the Infectious Diseases Society of America. Clin Infect Dis. 2008 Jun 15;46(12):1801-12. doi: 10.1086/588300. PMID: 18462107.
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Discussion

- Blastomyces dermatitidis* is a dimorphic fungus endemic to the midwestern, southeastern and south-central United States.
- In Louisiana, blastomycosis is mostly reported in Washington Parish.
- Infection occurs primarily through inhalation of aerosolized spores of *B. dermatitidis* into the lungs.
- Blastomycosis exhibits a wide spectrum of illness:
 - Subclinical infection: 30-50%
 - Acute or chronic pneumonia
 - Extrapulmonary infection in 25%-40% of symptomatic patients with cutaneous, osteoarticular, genitourinary or central nervous system involvement.
 - Disseminated blastomycosis occurs more frequently in immunocompromised patients.
- For severe pulmonary blastomycosis, the recommended treatment is:
 - Induction therapy of liposomal amphotericin B 3-5 mg/kg per day or amphotericin deoxycholate 0.7-1 mg/kg per day for 1-2 weeks or until clinical improvement,
 - Followed by oral itraconazole therapy: loading doses of 200 mg three times daily for 3 days, then maintenance dose of 200 mg twice daily for total of 6-12 months.
- In mild to moderate disease, oral itraconazole therapy is recommended without amphotericin induction.
- This case provides an excellent example of how detailed exposure history and risk factor assessment can provide important clues for diagnosis.